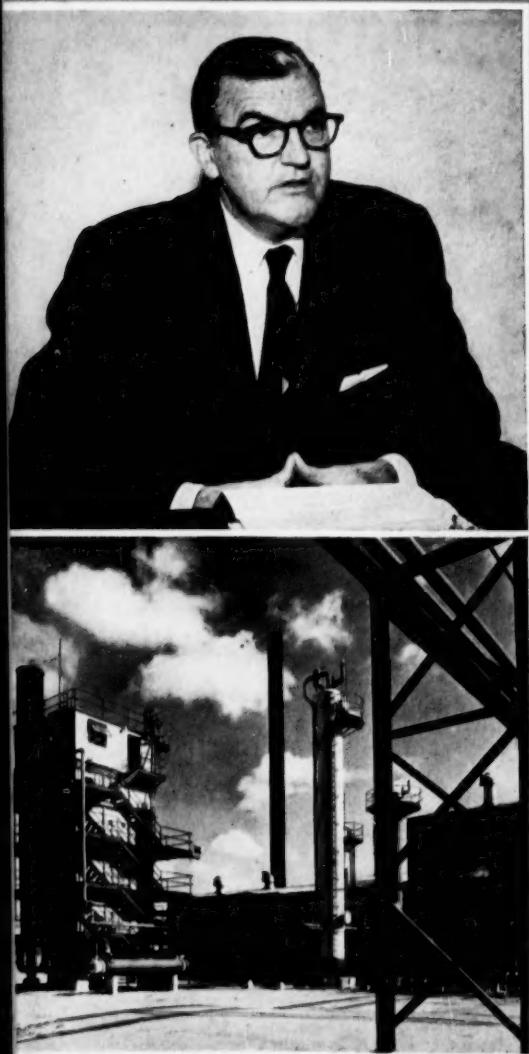


# Chemical Week

August 6, 1955

Price 35 cents



► **Wecco's Burns: Builds chemical complex in the desert on salt and water-power base . . . p. 29**

In case of fire, which comes first, the output or the put-out? Here's a novel answer . . . . . p. 52

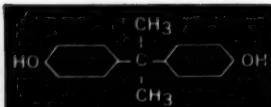
Target: refractories to unlock titanium's future . . . . . p. 86

► **There's new pressure on acrylate plants to meet needs of new outlets . . . . . p. 81**

Bureau of Mines profiles problems, appraises future of mineral producers . . . . . p. 94

# Shell Chemical Corporation

...Your new major source of  
high-purity BISPHENOL A



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\* If your production calls for high-purity, uniform Bisphenol A, you will be glad to know that—thanks to expanded facilities—Shell Chemical is now a *major* source of this important intermediate.

For epoxy and phenol-formaldehyde resin manufacture in particular, you

will want Shell Bisphenol A. Its quality is the result of Shell Chemical's careful control in production.

Shell Bisphenol A is supplied in flake form, packed in multiwall 50-pound bags for ease of handling. Your letter-head request will bring a sample for evaluation and a new technical bulletin.

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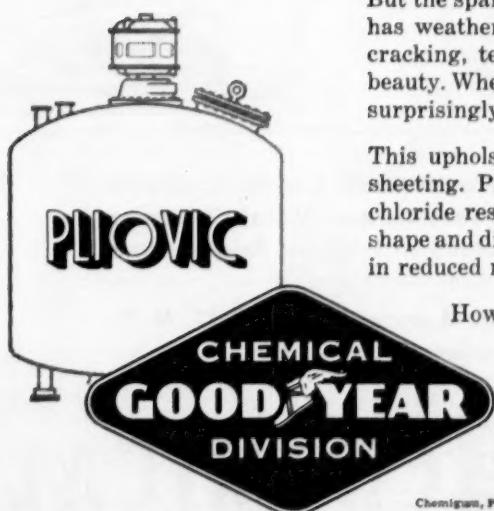
## How to keep a beauty at sea

HOT SUN, salt spray and hard usage raise havoc with the upholstery on pleasure craft.

But the sparkling, white upholstery on the runabout shown above has weathered two seasons with no sign of wear, color change, cracking, tearing or tackiness—has completely kept its original beauty. When dirty, it whisks clean with a damp cloth. And it stays surprisingly cool in the sun.

This upholstery is made of PLIOVIC in the form of heavy-duty sheeting. PLIOVIC is the family name for a series of polyvinyl chloride resins which are carefully controlled as to particle size, shape and distribution for easy processability. This results not only in reduced manufacturing costs, but also in superior service life.

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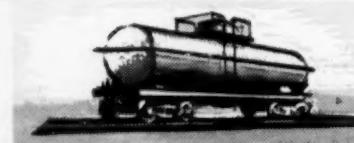


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**STAUFFER CHEMICALS**



# Chemical Week

Volume 77

August 6, 1955

Number 6

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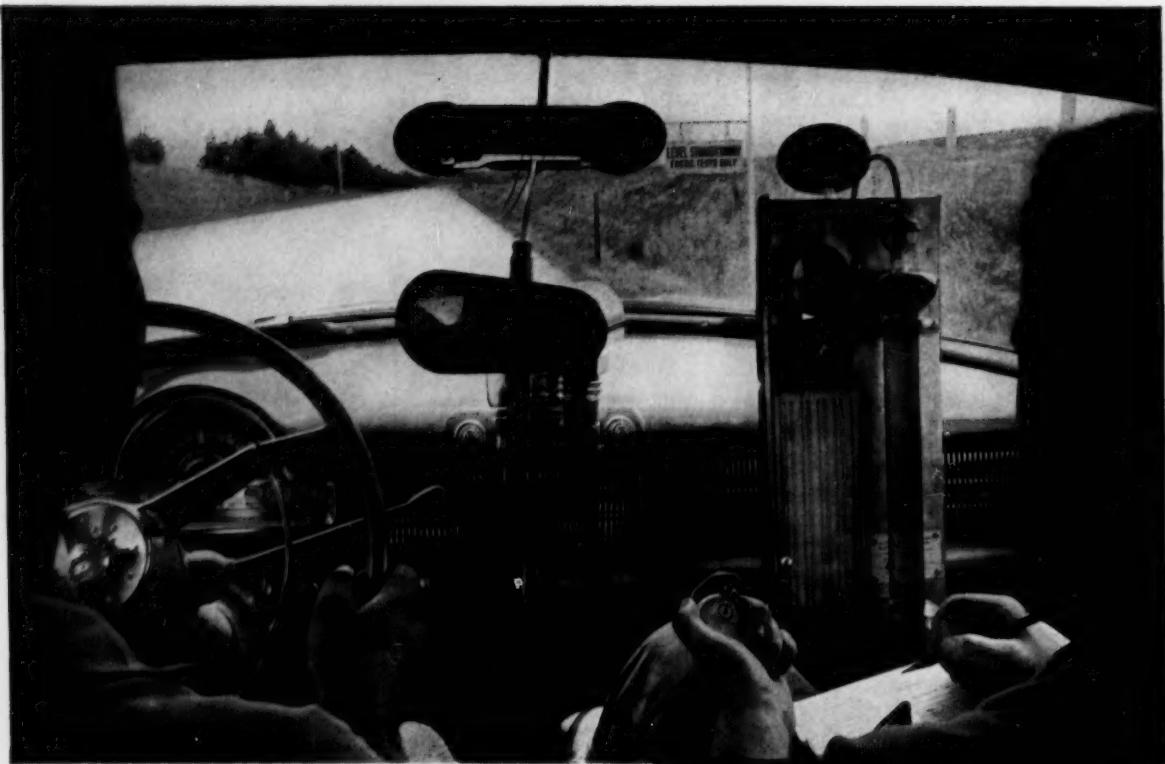
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**TESTING FUEL ECONOMY** of new automobiles is part of Detroit's continuing research to get more power out of gasoline. Burette at right measures fuel consumption. Cyanamid is helping refiners meet the trend toward premium gasoline with a new catalyst—**AEROCAT TRIPLE A® High Alumina Catalyst**. It is the first catalyst with high alumina content (25%) to prove successful in full-scale commercial use. Offering higher activity and improved selectivity, **AEROCAT TRIPLE A Catalyst** boosts the efficiency of cracking units. It makes possible greater output of gasoline per ton of catalyst used or better cracking performance at the same rate of catalyst usage. (Industrial Chemicals Division)

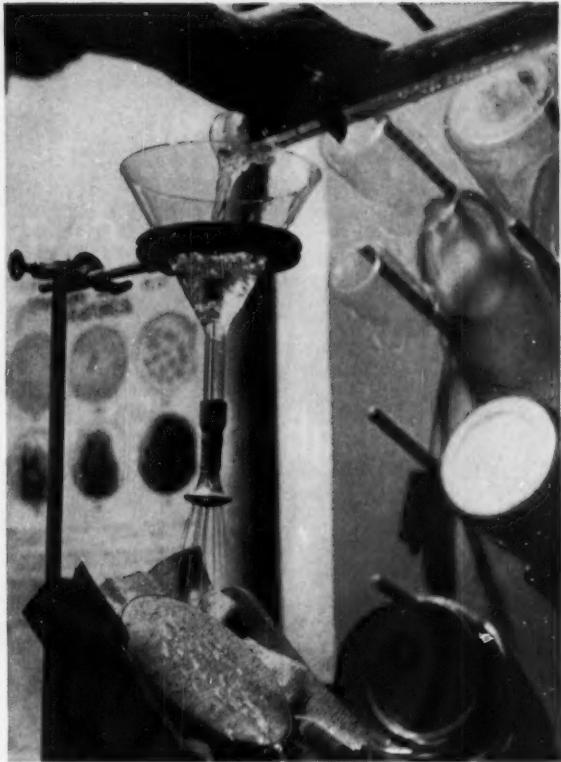


**NOW AVAILABLE IN SOLID FORM**, CYANAMER® 370 Acrylic Polymer is water soluble and has unique properties. It is economical in handling and shipping, and has excellent storage stability. CYANAMER 370 is substantially free of extraneous inorganic salts and has no odor of ammonia in solid form or aqueous solutions. CYANAMER 370 is an extremely uniform product which provides excellent thickening action in emulsions and rubber latexes, strong adhesive and binding properties, and will form films from water solution. Solutions are stable over wide pH range and may be coagulated at pH below 3-4. (Industrial Chemicals Div.)

# Life... on the Chemical Newsfront



**EFFICIENT PROTECTION FOR VINYL PLASTICS** against discoloration and degradation by the ultraviolet component of sunshine now can be obtained with CYANAMID'S U.V. ABSORBERS. These compounds are substituted benzophenones and they protect by converting destructive ultraviolet into harmless heat. CYANAMID'S U.V. ABSORBERS impart longer life and greater utility to a wide range of vinyl plastics and coating materials. (New Products Dept.)



**UNIFORM PERFORMANCE THROUGH QUALITY CONTROL** is an important feature of CYANA® Textile Finishes. A durable finish such as CYANA PERMEL PLUS® imparts water repellency, spot and stain resistance, and wrinkle resistance to cotton, acetate, nylon, rayon, and blends. In addition, garments made from fabrics treated with PERMEL PLUS Finish not only retain their smart appearance but also wear longer. (Organic Chemicals Division)

## News Briefs

**CALCOFLUOR® WHITE RWS, NEW WATER-SOLUBLE WHITENER,** has been developed to facilitate application to textiles made of wool, nylon, acetate, pure silk, and Orlon<sup>†</sup> acrylic fiber. Now, white and colored garments made from these treated textiles will be whiter and brighter than those made from untreated textiles. (Organic Chemicals Division)

**SURGILOPE® STERILE PACK** is a new and important advancement in packaging sterile sutures for medical use. Developed by Davis & Geck, Inc., a Cyanamid subsidiary, SURGILOPE provides a double envelope of metal foil and glassine to replace glass tube packaging. It is safer to handle, saves time in opening, and requires one third less storage space. At present, SURGILOPE is available only with ANACAP® black silk sutures. However, other sutures will be included as soon as production facilities permit. Samples will be sent to hospitals on request. (Davis & Geck, Inc.)

**FOR PROMPT RELIEF OF PAIN** from peptic ulcers, physicians can now prescribe PATHILON® Iodide Tridihexethyl Iodide. Developed by Lederle Laboratories Division of Cyanamid, this remarkable drug relieves gastrointestinal spasms by blocking the nerve impulses which control the smooth muscle lining of the stomach and intestines. (Lederle Laboratories Division)

<sup>†</sup>Du Pont trade-mark

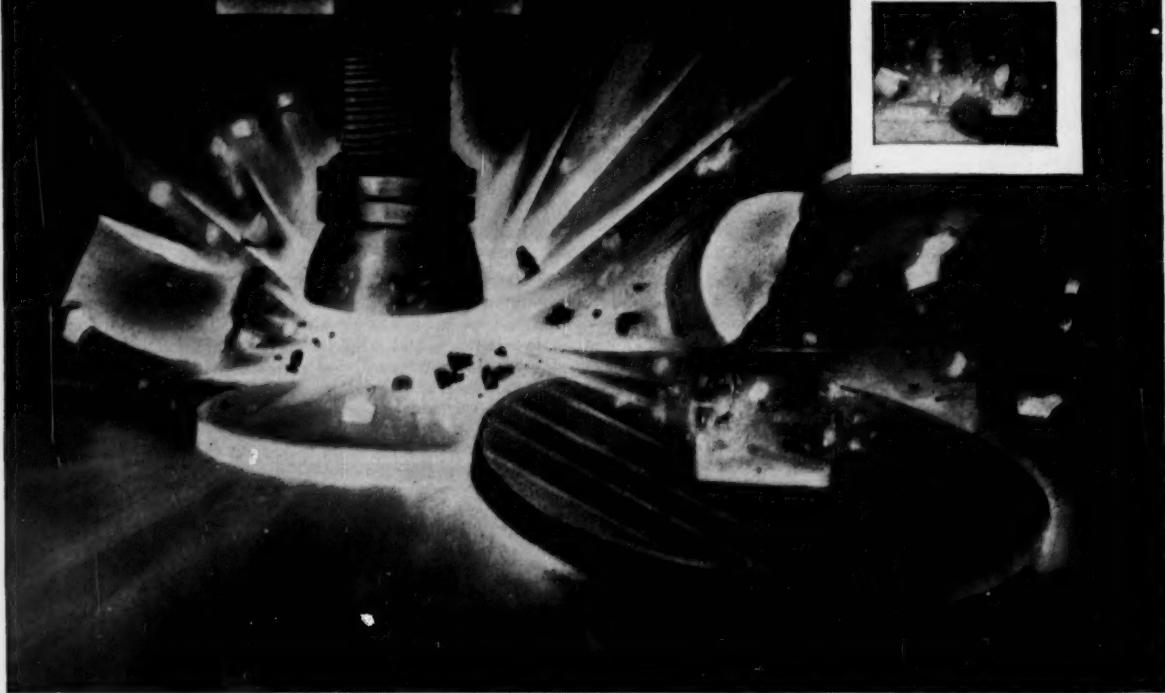
\*Trade-mark



C.W.

Additional information may be obtained regarding these products by writing on your business letterhead to the Division of American Cyanamid Company, 30 Rockefeller Plaza, New York 20, N. Y., indicated in the captions.

# HARSHAW TABLETED CATALYSTS made stronger through RESEARCH



## Rugged Tablets Reduce Reactor Shutdowns

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# liquid detergent

## Stepan Raw Materials

Among the many synthetic liquid detergent raw materials offered by the Stepan Chemical Company, you are certain to find just the right characteristics for your use and price requirements. Our laboratory would, of course, be pleased to work with you on any particular problems you might have.

Many formulators find that the completeness of

the Stepan line of liquid detergent raw materials makes it readily possible to achieve substantial economies by ordering mixed truckloads or carloads effecting the lower carload price on all of the individual items.

A few of the products of particular interest in the Stepan line of liquid detergent raw materials are given below.

### DS-60

A specially processed, desalted, sodium alkyl aryl sulfonate. It is a high active slurry in an alcoholic solution and is an excellent and economical foaming, wetting and dispersing agent. In addition to its use in liquid dishwashing detergents, it is also an effective detergent for cotton, wool and synthetic fibers.

### LDA

A 100% active, fatty acid alkylolamide and nonionic in character. It provides superior foam stability, detergency, and gives good sudsing quality in the presence of grease. LDA is also noted for being a splendid thickening agent, and an auxiliary emulsifier helping to counteract the defatting action of alkyl aryl sulfonates.

### B-153

An ethoxylated nonyl phenol sulfate, 60% active. It is a clear amber liquid with a mild, pleasant alcohol odor. B-153 gives a high and closely knit flash foam to liquid dishwashing detergents. It is also a good auxiliary detergent and is relatively mild to the skin.

### NP-10

A 100% active ethoxylated nonionic. It imparts excellent grease emulsification to liquid dishwashing detergents and makes possible better drainage, helping to eliminate film. Among its other advantages NP-10 can aid in lowering the cloud point of a liquid detergent formulation.

WRITE FOR COMPLETE INFORMATION

# STEPAN

CHEMICAL COMPANY

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Telephone: CEntral 6-5511

Dimethyl Sulfoxide • Fatty Alcohol Sulfates • Bulk Liquid Detergents • Sulfonated Oils • Amides • Foam Stabilizers • Alkylphenol Polyalkoxy Sulfates

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- A dependable filler and extender for phenolic resin molding compounds where its use improves the surface appearance of molded articles.**
- A filler for molded rubber compounds.**
- An anticaking agent.**
- A highly absorptive carrier for liquids being blended with solids.**

Consider Furafil 100 as a filler for phenolic resin molding compounds and molded rubber articles and as an anticaking agent and carrier in insecticide and fungicide compositions.

Write for samples and for our Bulletin 133.

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CHEMICALS DEPARTMENT**



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Portland 8, Oregon

## OPINION . . .

### TVA Phosphate

TO THE EDITOR: Inasmuch as you have reported on the production of diammonium phosphate by TVA in competition with private industry, I thought that you might be interested in the statement I made before a Congressional Appropriations Committee . . .

R. E. BENNETT  
President  
Farm Fertilizers Inc.  
Omaha, Neb.

*Here are some excerpts of opinions and contentions on the highly controversial subject:*

"So far as I know, diammonium phosphate is produced by one company in Michigan, one in Illinois, two in Colorado, two in California, and by TVA at Sheffield, Ala."

"When I heard that TVA was planning to go into production of diammonium phosphate on a commercial scale, and sell at a price ruinous to private industry, I called to the attention of TVA . . . there was no need for TVA to expand its facilities to make this product, which they had not manufactured before . . . that six private plants already in production had capacities to produce much more of this material than there was a market for . . .

. . . At a meeting with TVA officials, representatives of Colorado Fuel and Iron and I . . . [maintained] that TVA production was not needed on an experimental . . . educational . . . any other basis . . . because industry was prepared to develop the market . . . that sale at prices we had heard mentioned would be ruinous to us . . . would discourage rather than encourage production . . . by industry"

"TVA men practically told us that our costs were too high, that no one had a place in the industry unless he manufactured his own phosphoric and ammonia at the same location . . ."

"The Nebraska Fertilizer Institute . . . passed a resolution unanimously that . . . TVA was establishing a serious precedent in the fertilizer industry . . . was hurting the industry rather than helping . . ."

"To all protests TVA has apparently turned a deaf ear . . . TVA says distribution is for experimental and educational purposes . . . that require-

ments it places on distribution and use of fertilizers confines it to educational and demonstration programs . . . avoiding direct competition with commercial producers . . . This is just so much 'apple sauce' or 'bunk' . . ."

"TVA pleads that it represents only a small part of national production . . . Gordon Clapp, when chairman of TVA, said in 1951 that TVA produced 191,800 tons of . . . superphosphate . . . that's about 20% of national output . . . 136,000 tons of ammonium nitrate . . . again about 20% . . . TVA is no small enterprise . . ."

"TVA says that private industry will turn out 30,000 to 40,000 tons of diammonium phosphate this year . . . Its own facilities have been modified to have a capacity of 40,000 tons . . . When utilized, TVA will be producing 50% or more of domestic production . . ."

"TVA says there is a potential market of 'several hundred thousand tons' annually. I do not agree . . . so far as the foreseeable future is concerned . . . I feel rather sure that current sales by private industry are about 12,000 tons per year . . . The potential market is considerably more . . . but to mention several hundred thousand tons yearly is, in our opinion, fantastic . . ."

"TVA is selling diammonium phosphate in bulk at \$103.32 per ton f.o.b. Sheffield, Ala. This is just about exactly the cost of ingredients to private producers . . . without freight allowance . . ."

"We maintain that TVA is discouraging rather than encouraging private enterprise . . ."

### Rent 'Em

TO THE EDITOR: . . . Re your news article on company airplane travel ("Sprouting Bigger Wings," June 4, p. 28) . . . I am employed by one of the major chemical companies and I cover my Northwest territory by private

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

FAMOUS LIGHTHOUSES OF AMERICA



*FOWEY ROCKS LIGHTHOUSE* is situated on the outer reefs 11 miles southeast of Miami, Florida. Built in 1878, it is of iron pile construction and stands in 4 feet of water with the light itself 110 feet above water. Fowey Rocks Lighthouse is one of a series of great offshore lighthouses that have made navigation safer and helped to eliminate an infamous wrecking industry that once thrived along the dangerous Florida Reefs.

*Greater Safety* and true guidance in the use of electrochemical products have always been important factors in the service Niagara Alkali Company offers to its customers. You can always depend on the quality of Nialk® Liquid Chlorine, Nialk Caustic Potash, Nialk Carbonate of Potash, Nialk Paradichlorobenzene, Nialk Caustic Soda, Nialk TRICHLORethylene, Niagathal® (Tetrachloro Phthalic Anhydride).

**NIAGARA  
ALKALI  
COMPANY**

60 East 42nd Street  
New York 17, N.Y.

## OPINION . . . . .

plane whenever weather permits . . .

As it happens, my company is not among the "10% of the 6,000-odd business organizations owning and operating aircraft in the U.S." In fact, the company looks the other way at the very mention of my aerial activities. As a result, I have to make up my flying expenses at the 7¢ mile I am allowed for my automobile . . .

Imagine my amazement when I read that "even tiny single-engine Cessnas take about \$39/hour (30¢ mile)" . . . I rent a Cessna-170 for my work—the usual rate is \$15/hour. By guaranteeing the owner 50-100 hours/year I get it for \$12/hour or 10-11¢ per mile—and I assume he realizes a small profit. I hope you didn't scare too many air-minded people away from flying by the prices you quoted . . .

When the money saved in time, meals away from home and hotel bills is considered, the cost of my flying compares very favorably with the 8-9¢ per mile it costs me to operate my Chrysler. The other advantages of flying more than make up for any difference in cost . . .

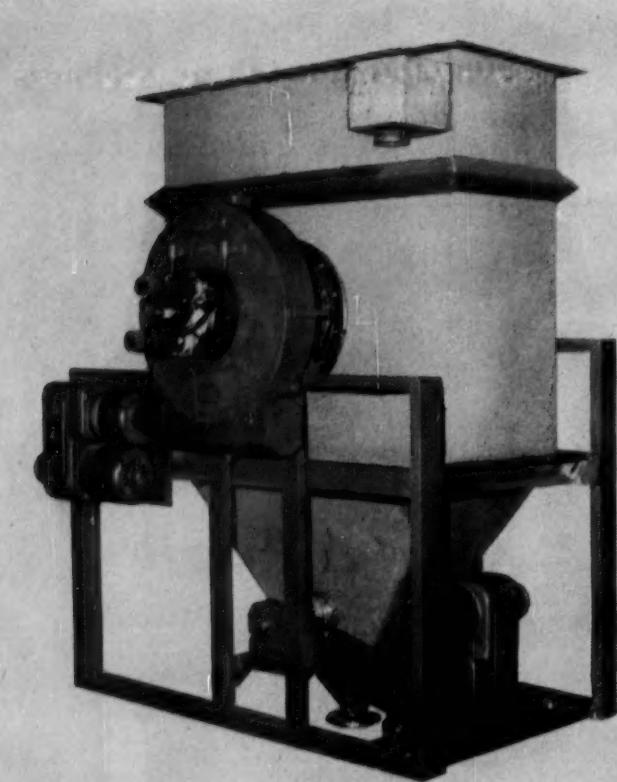
FREDERICK H. IHLENBURG  
Portland, Ore.

No argument. We outlined the actual operating costs of company planes—including, as we mentioned, pilot salaries, insurance, upkeep, depreciation. Cost per mile varies, of course, with mileage flown. However, Reader Ihlenburg, who is his own pilot (2,000 hours to his credit) musters a good case for the economies of flying.—ED.

## Topsy Salaries

TO THE EDITOR: . . . I have noticed your recent news reports on starting salaries for engineers . . . thought that you, and perhaps your readers, might be interested in the observations I have made as a professor of engineering . . .

I have been amazed each year to see how the hiring season starts out with salaries at about the high level of the previous year. Then, before it is over, they have jumped another notch. The same is true this year. In general, in the past, petroleum companies have paid somewhat more than straight chemical companies . . . this year the situation is different . . . chemical companies, in general, are out-bidding petroleum companies . . .



## Another Eimco Continuous Vacuum Filter

The machine pictured is built as two different machines. One contains a drum type filter with a top feed for drying sand or other crystalline materials. The other contains a disc type thickener filter which runs completely submerged. It is built with a large port for carrying the clarified product or filtrate and a small port arranged to admit a small amount of blow at the bottom sector for dislodging the thickened material so that it can be discharged at the bottom of the tank.

These are special filter applications and examples of developments in liquid-solids separation through filtration.

Eimco, with more than half a century of experience in serving the process industries, makes drum, disc, pan, pressure, plate and frame and tubular type filters with numerous attachments that can be applied to processing industries with difficult filtration problems.

Write for complete information.



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# magnesium oxide PELLETS

CARLOAD QUANTITIES

HIGH PURITY

PELLETS ACTUAL SIZE:  $\frac{1}{2}$ " diameter;  $\frac{1}{8}$ " thick

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REFRACTORY  
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INDUSTRIES

For experimental purposes,  
in any industrial plant, we will  
furnish adequate samples of International's  
Magnesium Oxide Pellets.

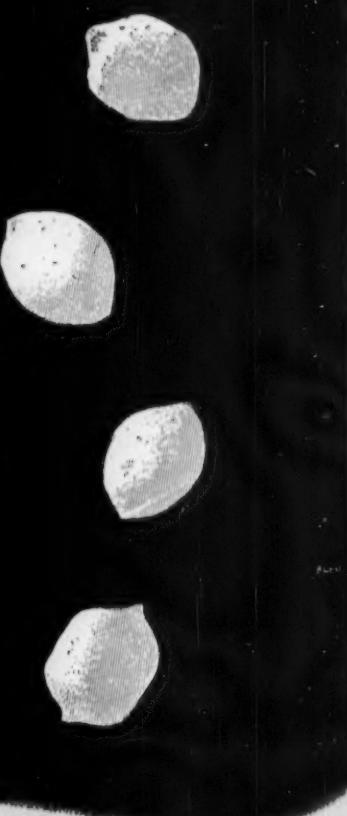
International's new Magnesium Oxide Pellets are available  
in grades with low iron, low boron, low lime, low ignition  
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## O P I N I O N . . . . .

It brings home the difference in teachers' pay and industrial pay. One of our staff members—who holds a doctorate and has many years of service—is receiving, on an annual basis, only \$5 a month more than has been offered his son—who has just received his B.ChE and has no experience . . . He is receiving \$22 per month less than the student with no experience who has the highest offer in his class.

What has me more worried is that salaries of our assistant and associate professors are almost up to the professor limits . . . Thus, although we can pay more in proportion for a younger man, he can foresee only a bleak future . . .

We older people, with our houses paid for, our children educated, can get along . . . but there is a lack of sufficient attraction for younger men . . . I am sure that this same situation obtains in industry . . . Many old-timers must wonder . . . and I wonder how they feel about the starting salaries we see quoted . . .

NAME WITHHELD

## DATES AHEAD . . .

American Soybean Assn., Natl. Soybean Processors Assn., joint meeting, Netherlands Plaza Hotel, Cincinnati, Aug. 29-31.

Society for Industrial Microbiology and American Institute of Biological Sciences, joint meeting, Michigan State College East Lansing, Sept. 5-8; session on fungicides, Sept. 6.

National Agricultural Chemicals Assn., annual meeting, Essex and Sussex Hotel, Spring Lake, N.J., Sept. 7-9.

Federal Wholesale Druggists Assn., annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., Sept. 11-14.

American Chemical Society, 128th national meeting, Minneapolis, Minn., Sept. 11-16.

National Petroleum Assn., annual meeting, Traymore Hotel, Atlantic City, Sept. 14-16.

Packaging Machinery Mfg. Institute, annual meeting, The Homestead, Hot Springs, Va., Sept. 15-18.

American Assn. of Textile Chemists and Colorists, Atlantic City, N.J., Sept. 22-25.

Atomic Industry Trade Fair, Sheraton-Park Hotel, Washington, D.C., Sept. 26-30.

Congress on Analytical Chemistry, Lisbon, Portugal, Sept. 9-16, 1956.

Chemical Week • August 6, 1955

## "Alamask" CASE HISTORY

**A well-known oil refinery had an injunction to stop operations of its catalytic cracking unit, due to odors emanating from spills, separators and other wastes, stack fumes and products of combustion. RHODIA was consulted and ALAMASK used. Here is an excerpt from a letter from the refinery:**

**"Very effective masking of odors resulted and in view of our actions all cases against us were withdrawn. We are very grateful to RHODIA for what they have done for us and are happy to pass on our experiences to others in similar difficulty."**

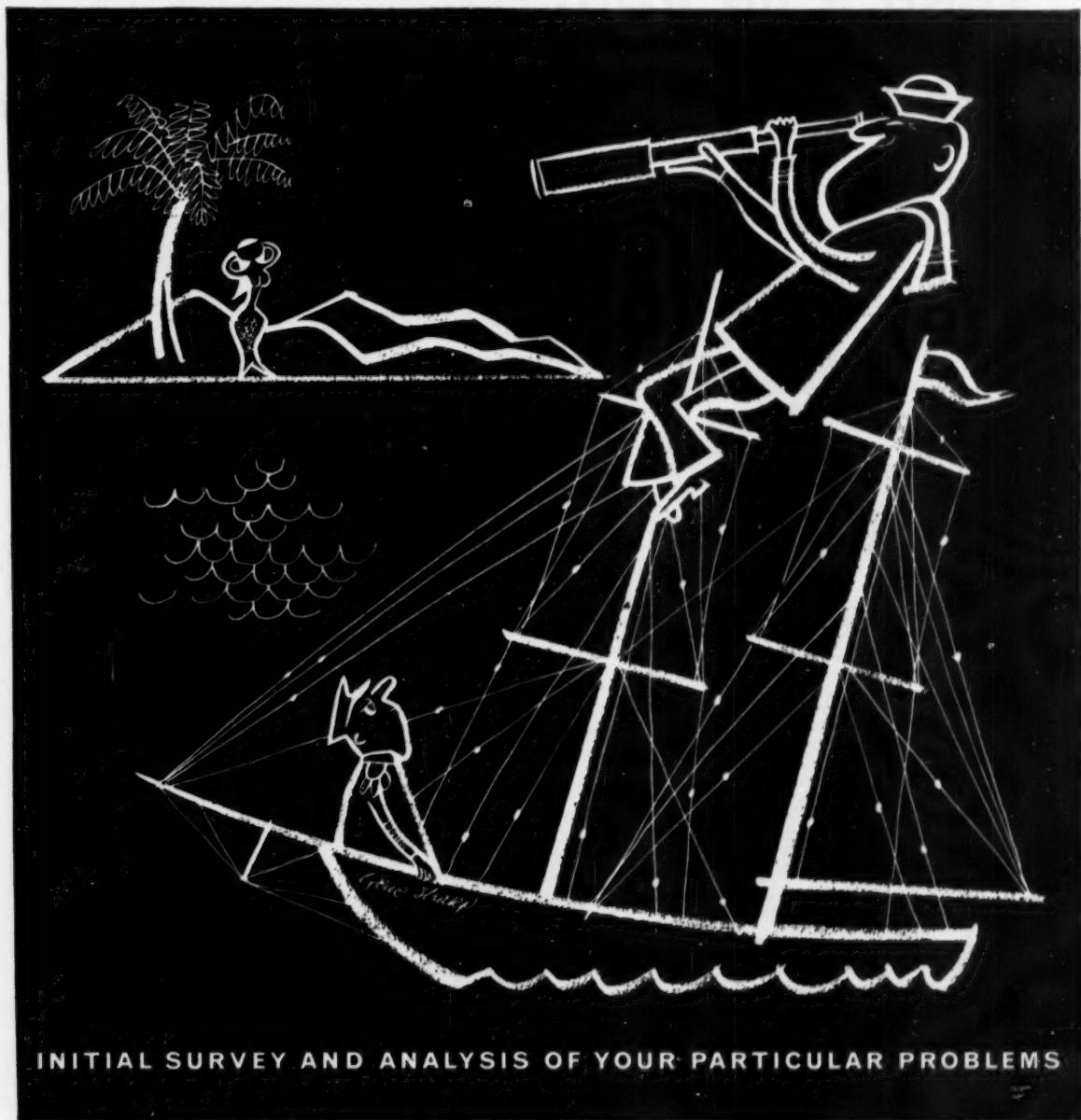
**If odors from your refinery are contaminating the community, RHODIA can help you, too. Our experienced odor engineers will be happy to consult with you on your malodor problems.**

# Rhodia INC.

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**Take a tip from  
the spray-on umbrella**



# for outer clothes!

**Aerosol packaging built a big home market for waterproofing compounds...and may do the same for your products**

Few people bothered to have coats treated with water-repellent compounds or to have the waterproofing renewed when a raincoat was cleaned. Then aerosol packaging was put to work . . . now the application of waterproofing compounds is an everyday task any housewife can perform. The resulting broader base of users has brought sales gains to the alert manufacturers who were quick to see the potential in aerosol packaging.

Similar imagination may bring new profit opportunities to your firm, too. Don't hold back because you feel you lack experience and know-how in aerosols. You'll find contract loaders in your area glad to help you profit from their experience with a wide variety of products. These firms can help with production and formulation problems, besides providing a complete aerosol packaging service that saves you investing in new equipment. Write us for their names.

You'll also find Du Pont's "Kinetic" Chemi-

cals Laboratory a source of valuable technical assistance. Its facilities are unsurpassed for basic research and development work on aerosols—many products on the market today were made possible by study and experiment conducted in this lab. And we can help you set up research and development programs of your own, too.

Du Pont has built a firm background in aerosols, based on years of experience manufacturing the most widely used aerosol propellents—"Freon".\* The consistent high quality, uniformity and safety of "Freon" propellents have won the respect of manufacturers throughout the aerosol field. There is one—or a combination—of these propellents ideally suited for every type product. For information or technical assistance, write to E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Division, Dept. 168, 11500 Nemours Building, Wilmington 98, Delaware.

## AEROSOLS OF THE FUTURE?

### Anti-slip Backing for Rugs



There are brush-on anti-slip rug backings on the market today, and anyone who has felt a scatter-rug whisk out from under him on a polished floor appreciates them. But a soluble elastomer sprayed from an aerosol container would make application easy for the housewife, neat for the do-it-yourself duffer. (The even application possible with aerosols might well contribute to longer rug life, too.)

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filled with background information on aerosols, and specific advice for approaching the aerosol field. We'll also be glad to answer particular technical problems you face in respect to aerosols, and to send any literature we have covering phases of aerosol development, production and marketing that interest you. Write to Du Pont at the address given above.



## FREON SAFE PROPELLENTS

\*"Freon" is Du Pont's registered trade-mark for its fluorinated hydrocarbon propellents



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mutual

chromium

chemicals

SODIUM  
BICHROMATE  $\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$

USES — Chrome tanning, dry color manufacture, textile dyeing, chemical oxidation, cleaning brass, copper, zinc, tin and other metals, corrosion inhibition, wood preservation.

SHIPPING CONTAINERS  
Bags, 100 lb. net • Steel drums, 100 lb. net • Fibre drums, 400 lb. net • 69% solution in tank cars

SODIUM  
CHROMATE  $\text{Na}_2\text{CrO}_4$

USES — Proprietary dry chemical mixtures, corrosion inhibition, wood preservation.

SHIPPING CONTAINERS  
Steel drums, 100 lb. net • Fibre or steel drums, 400 lb. net

POTASSIUM  
BICHROMATE  $\text{K}_2\text{Cr}_2\text{O}_7$

USES — Same as Sodium Bichromate; production of pigments, matches, green glass and vitreous enamels; photography and blueprinting; fur dyeing.

SHIPPING CONTAINERS  
Bags, 100 lb. net (granular only) • Steel drums, 100 lb. net • Fibre drums, 400 lb. net • (Available in granular or powdered form)

AMMONIUM  
BICHROMATE  
 $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$

USES — Photographic reproduction such as in photo-engraving, pyrotechnics, catalyst manufacture, porcelain colors.

SHIPPING CONTAINERS  
Fibre drums, 100 lb. net • Barrels, about 350 lb.

CHROMIC ACID  
 $\text{CrO}_3$

USES — Chromium plating, anodizing aluminum, chemical treatment of magnesium and aluminum alloys, inhibitive dips for metal prior to painting, manufacture of drugs, chemicals and catalysts.

SHIPPING CONTAINERS  
Steel drums, 100 lb. net • Steel drums, 400 lb. net

MUTUAL

MUTUAL CHEMICAL DIVISION  
ALLIED CHEMICAL & DYE CORPORATION

50 PARK AVENUE • NEW YORK 16, N. Y.



## NEWSLETTER

One result of the roaring bull market in common stocks is indicated this week by Wendell Barnes, head of the Small Business Administration. Sales and earnings for small companies should continue to soar; the rate of business failures should continue to fall off—all because, he says, "never since 1929 has there been such a favorable opportunity for the small firm to get equity financing from the public."

Investors are finding such offerings particularly attractive because prices of "blue chips" are now at a level where the chance of a capital gains killing has dwindled. Result: the economic future of small companies has never been rosier.

Not so cheerful, however, is the future for all "without compensation" industrialists who have worked for the Business & Defense Services Administration.

Brought out at Congressional hearings last week (*see page 21*) was the fact that all such WOC's may be liable for prosecution under federal conflict-of-interests statutes—for "conducting business services not related to defense and mobilization activities."

Counsel for the Auto Makers Assn. is so concerned about this possibility that it has instructed its members not to send WOC's to Washington unless the job definition for the BDSA's Auto Division Director is changed to specifically limit him to defense duties.

Says this counsel: "The fact that Commerce Dept. lawyers say there is nothing to worry about . . . will hardly be binding on the Justice Dept."

Speculation is rising as to whether Virginia-Carolina is planning a general face-lifting:

Four new members have been elected to the company's board of directors; the firm revealed at a stockholder's meeting (July 22) that it has active hopes for a recapitalization large enough to take care of preferred stock and dividends in arrears—some \$15.6 million.

But such a move will take considerable maneuvering. Virginia-Carolina also has some \$14 million in debt outstanding; and its accelerated amortization charges have jumped from \$61,000 to \$500,000 in the past year. One possibility: sale of the company's Bag Division—for needed cash.

There's evidence (unsubstantiated) that the Clint Murchison-controlled Delhi Oil Co. has uncovered commercially exploitable potash deposits north of Moab, in Grand Canyon, Utah.

Federal district land office (in Salt Lake City) reports that Delhi has moved to convert its potash prospect permits to potash leases. (This means the company must mine or otherwise exploit the deposits it leases.)

But so far Delhi officials refuse to comment on depth, area to be taken up, or the method they will use to exploit the company's holdings.

What will be interpreted in many quarters as the first tacit admission of the strength of Du Pont's polyurethane patent position was made last week. Nopco Chemical Co. has agreed to settle (out of court) the patent infringement suit filed against it by Du Pont on Sept. 3, '54, will

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## NEWSLETTER

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pay the Wilmington firm 1½% net value royalties on all products produced under Du Pont polyurethane grants.

What will happen about retroactive royalties, neither company will state.

The long-heralded Oil, Chemical and Atomic Workers' (CIO) organization drive has begun.

Discussion last week at a meeting of CIO's executive board in Washington centered on the amount of cash CIO is going to put up to finance the big push. First targets (as previously hinted): Standard Oil of New Jersey, Du Pont. But look for OCAW to spread in every direction.

India has been approached by the Soviet Union concerning installation (by Russia) of an atomic reactor and ancillary nuclear equipment. Recipient of the offer: Meghnad Saha, director of India's Institute of Nuclear Physics. In a letter to Prime Minister Nehru, Saha makes a strong plea for atomic autonomy, begs that the offer be given the same consideration as that of the U. S. company—which recently volunteered to install two reactors, one in Bombay, one in Calcutta.

Russian Premier Nikolai Bulganin, meanwhile, is outspoken in his criticism of the U.S.S.R. Ministry of the Chemical Industry "for failing to move fast enough to increase mineral fertilizer production." Also singled out for disapproval: inadequate output of organics, plastics, dyes, and substitutes for nonferrous metals.

The Russian Premier (as quoted by the official government newspaper *Izvestia*) flatly maintains that because of this failure, the Soviet chemical industry is "lagging behind the level of world technology."

Ferro Corp. (Cleveland) has come up with a brand new product—a porcelain-enamel-coated aluminum foil—that has aluminum foil producers dancing around in excitement.

Officials see it as eventually replacing mirror walls (the porcelain enamel on steel used in construction work) because of its greater pliability, rust-proofness.

For application, an adhesive can be applied to the back much in the manner of conventional wallpaper.

Unless they have still another legal maneuver up their sleeves, backers of the much-disputed cancer drug Krebiozen have lost the fight to prevent publication of a book that's expected to be highly critical of the drug and its supporters.

Justice Raymond Wilkins of the Massachusetts Supreme Judicial Court has upheld last month's lower court ruling (*CW, July 23, p. 15*) that to forestall publication of George Stoddard's *Krebiozen: The Great Cancer Mystery* would violate the "free press" amendment of the U.S. Constitution. Publication is slated for next month.

New style in ground-breaking festivities has been inaugurated by the U. S. Oil & Refining Co. in Tacoma, Wash.

With Chico Marx as master of ceremonies, the first spade of earth was turned for the \$10-million refinery; the event became a highlight of Tacoma's Fun Fair Week.



► **AT HOME**—Transparent liquid starches based on CMC make possible a new concept in home laundering. Easy to use, these starches never stick to the iron, never coat the fabric with a dulling film that clouds bright colors.

As a sizing agent, Hercules® CMC has been paving the way for new concepts in home starches and textile warp sizes.

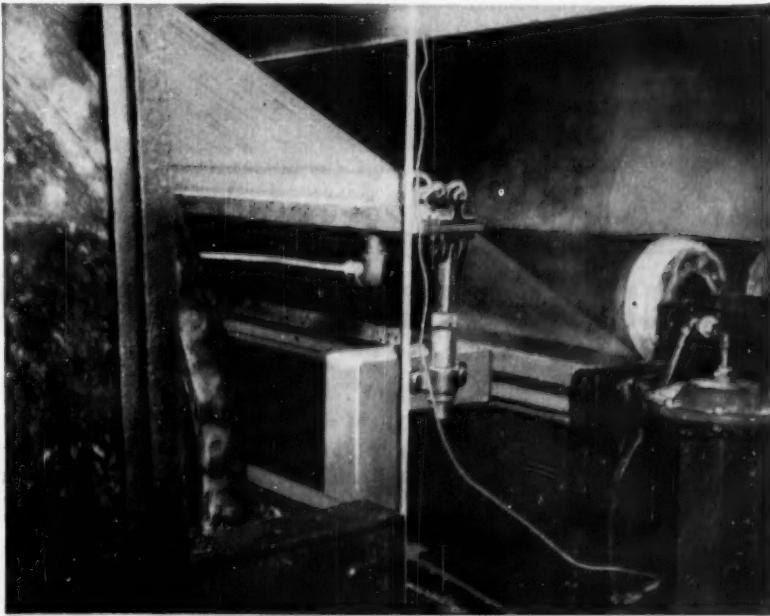
An exceptionally versatile water-soluble film-former, CMC makes possible solutions that form clear, tough, flexible films. Compatible with a wide variety of gums, plasticizers, and resins, CMC is a general-purpose film former that is insoluble in organic solutions.

CMC's uniformly high quality from lot-to-lot makes it a product you can depend on for the same performance time-after-time.

Prove the value of CMC for yourself. Write for testing samples, indicating your proposed use, so proper type can be sent.

# FROM TEXTILE SIZE TO HOME STARCH THE KEY IS CMC

► **IN THE MILL**—In warp sizing, starch-CMC blends provide adequate sizing in textile manufacturing operations at lower add-ons; eliminate the need for enzymes, and cut water usage.



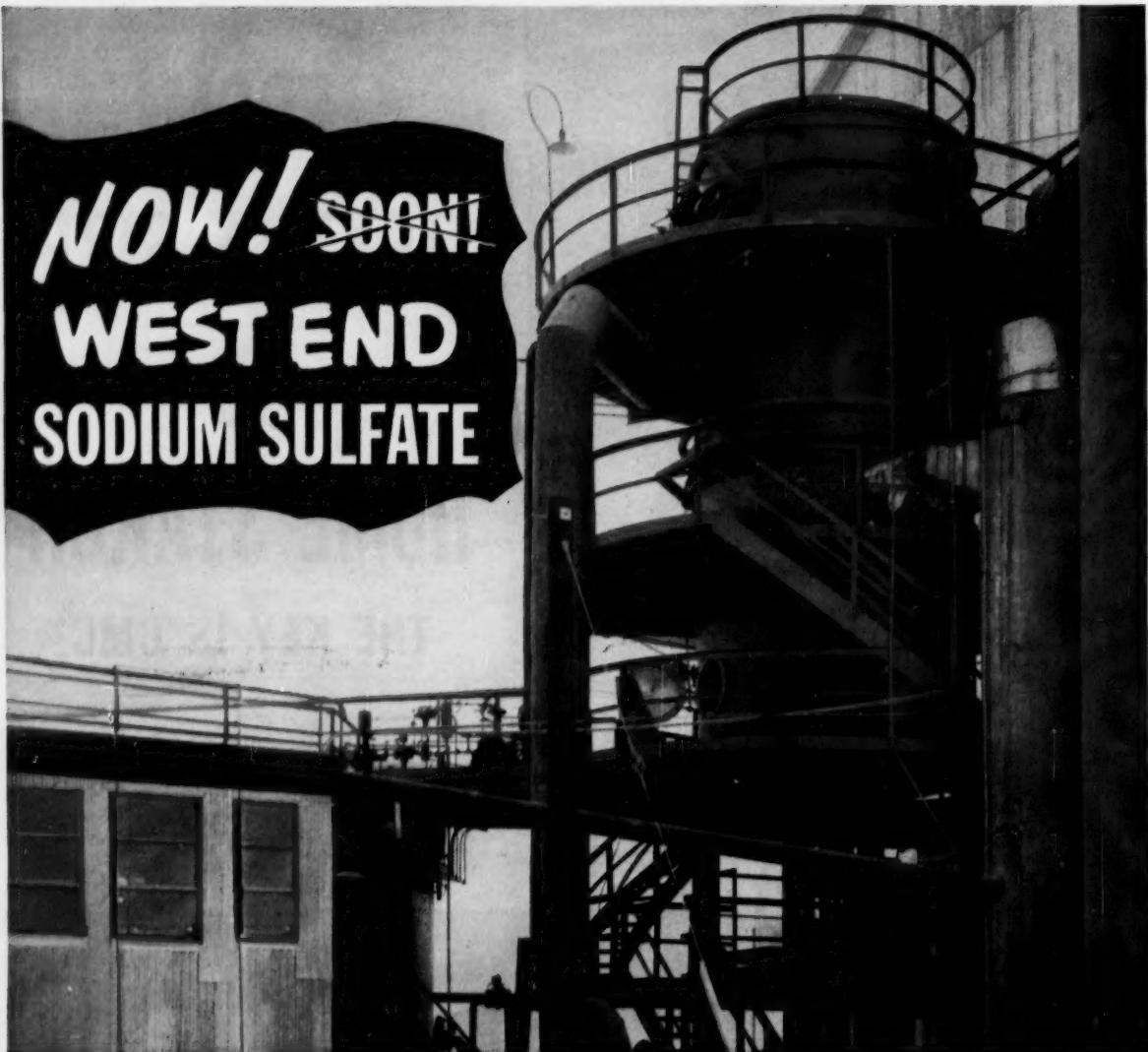
Virginia Cellulose Department  
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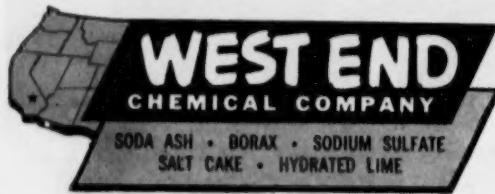
**NOW! ~~SOON!~~**  
**WEST END**  
**SODIUM SULFATE**



## **New Plant now in production taps natural source of sodium sulfate**

West End Chemical Company now is producing Salt Cake and Anhydrous Sodium Sulfate at the rate of approximately 50,000 tons annually. These new products maintain the *premium quality* which has

characterized West End Soda Ash and Borax for over 30 years. We proudly add Salt Cake and Anhydrous Sodium Sulfate to the list of industrial chemicals carrying the well-known West End brand.



*West End will be pleased to submit samples, prices and freight schedules for your evaluation upon receipt of your inquiry. We request that you include any applicable specifications governing your requirements for these products.*

## **West End Chemical Co.**

Executive Offices: Nineteen Fifty-Six Webster Bldg., Oakland 12, California • Plant: Westend, California

## BUSINESS &amp; INDUSTRY . . .



BERTINE, HATHAWAY: Two former BDSA administrators now . . .

**Under Close Scrutiny**

**Congressmen are stepping up their investigation of the actions of industry men loaned, without compensation, to the government during the past several years.**

And it's the chemical industry and its executives that so far have borne the brunt of investigations, designed to provide the Democrats with charges of business favoritism by the Eisenhower Administration.

Rep. Emanuel Celler's (D. N.Y.) Antitrust Investigating subcommittee is probing deep into the actions of industry men who have served with the National Production Authority, and its successor, the Business & Defense Services Administration, and into the fundamental philosophy of the organization itself. Among the highlights of last week's hearings:

- Committee investigators charged that 1953 agreements made by producers of ammonia and toluene to supply varying percentages of their output to the government may have violated the antitrust law. In addition, they indicated that NPA and BDSA violated the Defense Production Act

by not getting clearance of such arrangements from the Justice Dept. The ammonia and toluene agreements were reached during the time that Norman Hathaway, then on loan from Davison Chemical, was division chief. No charge has yet been made, however, of any direct participation in such agreements by Hathaway. (BDSA officials countered by saying that arrangements were made between individual companies and full-time employees, and that there was no inter-company collusion that would have necessitated antitrust clearance.)

- They charged Leonard Pasek, who served as head of NPA's Paper Division and as BDSA assistant administrator, with sending confidential reports of projected requirements of the pulp and paper industry to officials of his own company, Kimberly-Clark.

At the end of a memo, apparently dictated and signed by Pasek, which accompanied this document, was an admonition that "if you do not wish to keep it, please destroy it."

Pasek testified he had no definite recollection of the document, but

thought that it might have been a private trade association report.

Also listed among documents transmitted to his company were "confidential copies" of proposed testimony on newsprint shortages to be presented to a Congressional group by the Commerce Dept., and a preliminary draft of proposed federal purchase specifications.

- Committee counsel introduced Defense and Commerce Dept. memos that indicated that Ansul Chemical, Diamond Alkali, and Dow Chemical wished to prevent sale of government methyl chloride to General Electric, to which the three companies sold a major part of their production. Counsel raised the points of company collusion, and of improper influence by BDSA. The name of Herbert Bertine, head of the BDSA Chemical & Rubber Division at the time, figured in such material. He was on loan from Allied Chemical, itself a methyl chloride producer.

(Minutes of the meeting called by BDSA to discuss the methyl chloride situation, however, indicate that while Bertine presided, he took no part in the discussions.)

- Charges were also made that WOC executives recommended against increases in fast tax write-off expansion goals that would have increased competition to their own firms. The names of Pasek, Lyall Tracy, of Rayonier; Harold Erskine, of Alcoa; and George Perkins, of Reynolds Metals, figured in testimony at this point. (BDSA spokesmen replied to this charge that the WOC's in question only made recommendations. The Defense Production Administration, and, later, the Office of Defense Mobilization, made the actual decisions.)

- The charge was also made that the Commerce Dept. violated its own rules, which bar lawyers from serving as WOC's. Specifically involved here: William A. Simon, Jr., who served BDSA's General Components Division. It is expected, however, that here again the name of Herbert Bertine, who is also an attorney, may come up later.

## CITED IN COURT CASES . . .



ACTUAL PRODUCTS, ALLEGED PROMISES: They spur new suits on . . .

**Old Issue: What's Binding?**

Pending this week in New York are three lawsuits involving chemical process firms in one of the most touchy situations encountered by any businessman—that in which someone accuses him of breaking an implied agreement or promise:

- In one suit, a housewife alleges that a soap and detergent maker became obligated to pay her after reading her letter and later marketing a new product that she regards as similar to one suggested in her letter.

- A second plaintiff seeks to collect for a marketing plan he suggested, contending that the company later used parts of his scheme.

- And in the third suit, a man is asking for a year's salary on the ground that he was employed by the defendant company, even though he wasn't assigned any work.

All three of the process companies concerned have denied the charges and are contesting the suits.

**Appropriation or Dedication:** The soap product suggested by Mrs. Constantine Galanis of Annandale, Va., was described in her 1952 letter to Procter & Gamble as "a granulated soap with the addition of pulverized bluing . . . I would call BLUE." Her letter started with the phrase, "I have an idea I would like to sell to you."

P&G replied by thanking her for writing, but explaining that fluores-

cent or "white" dyes in its products like Tide, Duz and Oxydol "really make the use of bluing unnecessary." "We have considered such a product many times in the past, but up to now have always decided against it," the company told her. "It would be excellent for the regular laundry, but many people do not like to use a blue wash product for dishes, for colored fabrics or for lingerie."

Introduction of "Cheer" that same year constituted "unlawful appropriation of plaintiff's original and novel idea," according to Mrs. Galanis' complaint; and she's asking judgment for \$1 million and costs. P&G's answer counters that (1) the complaint fails to state a claim on which relief can be granted, and (2) unsolicited disclosure of plaintiff's alleged idea resulted in a forfeiture or dedication of any and all rights in and to the idea.

**To Boost Salt Sales:** Frank Madigan of New York says that he developed and showed to Morton Salt Co. officials a merchandising plan and promotional scheme that he calls "completely revolutionary for the salt industry," which he criticizes for having been set in its merchandising methods for 50 years. Later, he charges, Morton instituted advertising campaigns and merchandising methods "in many respects identical and similar to" the ones he had proposed;

and he's asking for \$2.5 million plus interest.

Morton admits that Madigan submitted certain plans, but denies that it used those plans or that it had any written agreement with Madigan. The company says it carried out its only promise: to return the plans intact if not accepted.

In the other case involving disagreement over whether there was an agreement, Lawrence Ely of New York is suing the American Chlorophyll Division of Strong, Cobb & Co. for \$20,000 salary and \$1,000 expenses. A Strong, Cobb spokesman told CW that Ely had no contract.

**Union on the Spot**

Awaiting trial this week on an action that may mean the end of the so-called "left-wing" labor unions in the U.S. is the International Union of Mine, Mill & Smelter Workers, which represents production workers in a number of chemical process plants and in mines and refineries that supply various chemical raw materials.

Mine-Mill—one of 11 unions ejected from the CIO five years ago on charges that they were Communist-dominated—has been selected by Attorney General Herbert Brownell as the first of those unions to be officially branded as "subversive." Brownell's accusations—filed last week—came in a request to the Subversive Activities Control Board to order Mine-Mill to register as a Communist-action or Communist-front group. The board will hold hearings on the charge, probably this autumn; and if it finds that Mine-Mill should register, then similar action will likely follow on the other unions. Registration would mean loss of bargaining rights.

This wasn't Mine-Mill's only headache last week. The union still faces litigation concerning its officers' non-Communist affidavits under the Taft-Hartley Act; a former Mine-Mill president, Reid Robinson, reportedly has agreed to testify before the Senate Internal Security subcommittee on "the Communist party line in the labor movement"; and President Eisenhower has been asked to take steps under Taft-Hartley's national emergency clause to halt Mine-Mill's month-long strike against three major copper producers for a 20¢/hour wage rise.



HUMPHREY: Sticks to his belief that quick tax write-offs are a . . .

## Serious Drain on Revenue

After a week of verbal hair-pulling, the future of the government's fast amortization program is still up in the air. But considering the wealth of testimony presented on the side of curbing tax write-offs, you can look for some curtailment in the government's current policy.

Considering Treasury Secretary George Humphrey's great influence within the Administration, that view is particularly reliable.

Humphrey has steadfastly maintained that continuation of the incentive program is costing the government \$800 million/year in taxes, further warns that this drain upon the country's resources will inevitably delay a general tax reduction.

In airing his views before the House Government Operations subcommittee holding hearings on the pros and cons of the matter, Humphrey said he wasn't advocating outright abolition of fast tax write-offs. Rather, he feels, they should be limited to "direct war requirement applications."

Example of what he means is seen by the wide spread of industrial activities that are receiving special tax concessions.

In July, the federal government

issued accelerated tax write-off certificates covering \$47,768,000 worth of new plants. But the range of facilities okayed for five-year deduction from a company's taxable income covered everything from traffic control equipment to production of intermediate chemicals.\*

This brief sample typifies (more than anything else) just what has led to the current controversy.

Opponents of the program have a ready-made opportunity to charge that the current interpretation of "who gets what" is far from the original intent, specified by Congress during the Korean War. And assignment of special tax concessions to other than producers of strictly military materials can be challenged as benefiting unfairly one firm as against another.

With these strong arguments (plus the natural political inclination to "do something about reducing taxes before the next Presidential elections"), there's little doubt that the Administration will make its move soon.

\* e.g., a \$2.9-million write-off (at 50%) to Combustion Engineering, Inc., (Chattanooga, Tenn.) for new steam engineering equipment; a \$4.0 million write-off (at 40%) to the Atchison, Topeka, and Santa Fe R.R. for centralized traffic control equipment; and a \$1.1-million write-off (at 100%) to Metal Hydrides, Inc. (Danvers, Mass.) for intermediate chemicals.

## Leveling-Off Sighted

Although their annual production rate increased nearly 10% over the first five months of this year, West German chemical executives are indulging in self-criticism this week because the 1955 gain is not as high as that registered in 1954.

The industry's index of production climbed from 225 in January to 246 in May, compared with the jump from 190 to 216 in the corresponding period last year (1936 output equals 100). Industrialists complained, however, that their rate of growth this spring has been curbed by the fact that many sections of the industry are already working at capacity.

Accordingly, current industry view is that further increases in West German chemical production and sales will largely depend on how rapidly production capacity for certain basic chemicals can be expanded.

Brisk demand for heavy inorganic and other basic chemicals in recent months has cut inventories deeply, industry sources report. Sulfuric acid stocks are said to be down to about half their normal volume.

Total chemical sales for the first four months of '55 were at an annual rate of 13.3 billion marks (\$3.2 billion), compared with 12.34 billion in early '54. Exports to South America declined, but sales to other areas rose, bringing total exports up to 1,067 million marks, compared with 921 million for the first four months of '54.

## More Jobs, Less Work

During depression days, it was "share-the-wealth" theories that provoked debate; this week, with automation taking over much human labor while the labor force is expanding, there are developments giving new impetus to "share-the-work" plans.

Following through on AFL President George Meany's recent advocacy of a 30-hour work week, the Trades & Labor Congress of Canada—soon to merge with the Canadian Congress of Labour—has adopted a platform calling for a 6-hour day, 5-day week.

Going Meany one better, another AFL leader is predicting "a 4-day week within 10 to 15 years." President O. A. Knight of the CIO's Oil, Chemical & Atomic Workers has long urged shorter work weeks as a means

## BUSINESS & INDUSTRY

of spreading out the work available when production is cut back; and the constitution of the United Mine Workers—whose District 50 represents many chemical workers—lists the 30-hour week as a primary objective.

Last week, Du Pont temporarily put some 400 salaried and hourly rated Wilmington shop employees on a 32-hour work week to avoid layoffs. The shops manufacture special equipment for the company's own use, and their work volume has declined as certain construction projects—mostly for government work—are being completed.

### EXPANSION . . .

**Aluminum Sulfate:** Stauffer Chemical Co. has started construction of a liquid aluminum sulfate plant at Tacoma, Wash., in conjunction with its fertilizer plant there. Completion is scheduled for October.

**Cement:** The Permanente Cement Co. will expand its operations into southern California with construction of a \$12-million cement plant in San Bernardino County.

Due to start production in early fall, 1956, the plant will have an initial capacity of 2 million bbls./year of portland cement.

**Sulfuric Acid:** Rico Argentine Mining Co. (Rico, Colo.) is scheduled to place its 200-ton/day sulfuric plant in operation this month.

But before the first acid starts to flow, the company has been asked (by Atomic Energy Commission) to up its capacity to 400 tons/day.

Reason: the continuing copper strike is pinching uranium mills on the Colorado Plateau for sulfuric acid. Garfield Chemical & Mfg. Co. is shut down at its 750-tons/day plant at Garfield, Utah, and uranium millers are buying acid from as far away as the West Coast and the Coeur d'Alene district.

Rico officials, however, have as yet made no decision on whether or not to expand their new plant immediately.

**Chlorine, Caustic:** Standard Chemical, Ltd., has started work on an expansion program at its Beauharnois, Que., plant, designed to lift chlorine, caustic soda production by 25%.

### COMPANIES . . .

**Reynolds Metals Co.** completed a \$235-million refinancing last week that shifts its obligations to the U.S. government into new hands:

The company borrowed \$155 million (on 25-year mortgage bonds) privately, and secured an \$80-million five-year unsecured bank loan.

These funds (plus \$10.5 million of company cash) were then used to pay off \$69 million of notes held by the General Services Administration, and \$76.7 million of private loans partly guaranteed by GSA.

Reynolds incurred its obligations to GSA in purchasing war-surplus plants in 1949, and in participating in the government-backed aluminum expansion programs during the Korean War.

**Nichols Fertilizer & Chemical Co.** (Oklahoma City, Okla.) has pur-

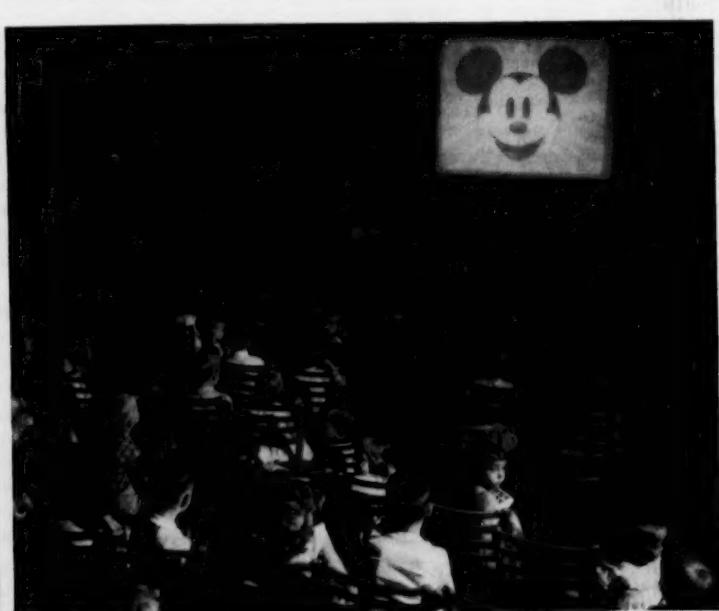
chased the three-year-old Big Boy fertilizer manufacturing plant (near Wheatland, Okla.) from the Oklahoma Fertilizer & Chemical Co.

The Big Boy plant was built in 1952, has an annual capacity of 50,000 tons/year. Sales price: "in excess of \$750,000."

**Basic Refractories, Inc.** (Cleveland) has bought three plants plus "the business, name, patents, and properties" of Kelley Island Co.

Kelley Island makes lime products, has plants located in White Rock and Gibsonberg, O., and outside Buffalo, N.Y.

Price: \$461,476 in cash, plus 46,148 of Basic Refractories' common stock. Basic will operate its new property as a separate division of its current operations—under Kelley's current management.



### Single Solution to Chronic Problem

PLAYING ON the irresistible appeal of Mickey Mouse to youngsters, Monsanto Chemical Co. has come up with a novel way to handle moppets on plant tours.

While mother, dad, and children from six years on are taking in the

sights, the small ones are entertained in the plant cafeteria by a fast-moving adventure of Mickey and Minnie.

On hand: volunteers from laboratory staffs—to insure that the young fry get plenty of attention.

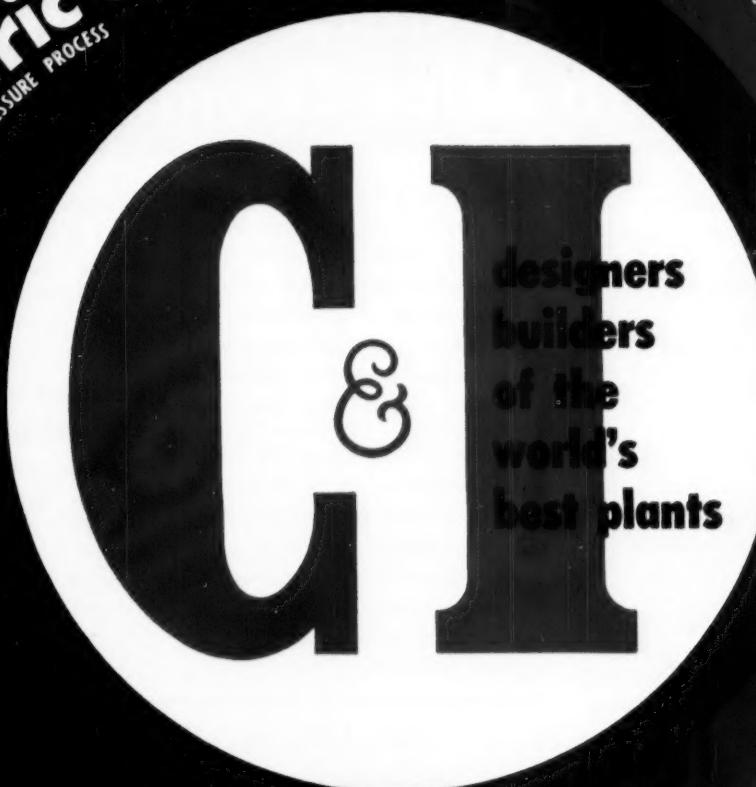
**nitric acid**

HIGH PRESSURE PROCESS

**ammonium**

STENGEL PROCESS - AMMONIATED SOLUTIONS

PRILLING  
**nitrate**



**complex fertilizer**

PEC PROCESS (NITRIC PHOSPHATE - AMMONIUM PHOSPHATE)



THE CHEMICAL AND INDUSTRIAL CORP. • CINCINNATI 26, OHIO



# ATLAS

CHEMICALS DIVISION

ATLAS POWDER COMPANY, WILMINGTON 99, DELAWARE

ATLAS POWDER COMPANY, CANADA, LTD., BRANTFORD, CANADA

## Make Antistatic Specialties with Atlas Chemicals

The elimination of static electricity from clothing, carpets, auto seat covers and other upholstery, as well as from various plastic articles, has opened up a fertile field for chemical specialty manufacturers who formulate antistatic products, package, promote and sell them to the customer.

The most effective basis for such antistatic products has been found to be organic chemicals of a "surface active" nature. Atlas has specialized in surface active chemicals for over fifteen years, and makes a wide variety for use as emulsifiers, detergents, etc. We have also had considerable experience in the field of antistatic agents—for many years Atlas has been a leading supplier (through textile mill supply manufacturers) to the textile industry, where elimination of static from fibers in process is a primary problem.

Atlas antistatic agents are of three types: non-ionic, cationic and anionic. The SPAN® products (fatty acid esters of sorbitol anhydrides) and TWEEN® products (ethylene oxide derivatives of SPAN materials) are typical of the Atlas non-ionic products, which are non-irritating to the skin, and do not have adverse effects on substances on which they might be used.

Cationic compounds usually prove more wash-fast than non-ionics, but are sometimes irritating to the skin. One of the most popular Atlas mate-

rials is Atlas G-3780, a mildly cationic polyoxyethylene alkyl amine derivative, which is relatively non-irritating, compatible with anionics, and harmless to most surfaces.

The anionic compounds, while relatively limited in their usefulness as antistatic agents, show particular applicability to the treatment of cellulose. The most widely used Atlas product of this type is Atlas G-3300, an alkyl aryl sulfonate salt.

Certain closely related Atlas products are also used to *promote* static. For example, dusting mops for use in a hospital are being treated with a static promoter, so as to attract

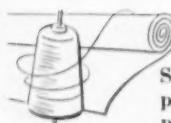
dust and hold it.

Most of the Atlas antistatic materials can readily be incorporated into spray-type compounds for use in aerosol containers.

### Detailed information and samples

Write to Atlas for a copy of the article, "Antistatic Specialty Products Open New Markets," by R. D. Fine, of Atlas, presented at the Spring Meeting of the Chemical Specialties Manufacturing Association. Samples and formulating assistance are available to specialties producers.

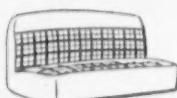
### USES FOR ANTISTATIC COMPOUNDS



#### TEXTILE FIBERS

Selection of the proper agent depends upon type of fiber, degree of lubrication or softening desired, and other factors. About 0.05% to 2% of the agent (based on weight of fiber) is usually sufficient.

#### AUTO SEAT COVERS, UPHOLSTERY, PLASTICS



Agent should be so selected as to avoid deterioration of material. It can be

incorporated into sprays, wiping pads, etc. TWEEN 20 is frequently selected. Treatment can be made to last 1-4 weeks.



#### CARPETS

The agent can be incorporated into sprays or into rug cleaners and is selected to avoid stickiness or deterioration of fibers. SPAN and TWEEN products are excellent on widest variety of materials; Atlas G-3780 is more permanent in action, but attacks certain man-made fibers.



#### OTHER USES

For dry-cleaning soaps, so that garments do not cling to body, attract soil or pick up lint in wash wheel. For home laundering additives. For anti-static polishes that repel static and dust.

# **Tween® 80 makes dozens of O/W emulsions**



When it comes to making oil disperse in water, Tween 80 is about as close to a jack-of-all-trades as you can find. Its chemical name is polyoxyethylene sorbitan mono-oleate. On the Atlas HLB scale, it has a value of 15 . . . which means that it has a high oil "solubilizing" power. This quality makes it applicable to

dozens of different products in which oil and water must be mixed together.

Clear "solutions" of many water-insoluble oils are readily made with this material. By adding a little Tween 80, various flavor, vitamin, perfume and other volatile oils that usually need to be dissolved in alcohol can be made into transparent water dispersions.

This oil-in-water emulsifying action gives Tween 80 considerable ability as a detergent. Shampoos, waterless hand cleaners and similar products capitalize on this quality.

In the field of insecticides, Tween 80 helps insoluble toxicants to mix in water for field application. A size-

able amount of Tween 80 goes into cutting oils and self-polishing floor polishes, too.

In ointments, creams and lotions, Tween 80 does double duty. It is used in oil-in-water products . . . and it also lends a hand in water-in-oil emulsions as an assistant to a lipophilic emulsifier, (such as the SPAN® products of Atlas) to reduce the amount of milling or homogenization needed to get a good dispersion.

If you make emulsified products, Tween 80 is a valuable material to know. Give us some details about your particular problem, and we'll be glad to send samples and technical data.

## **ATPET® 100 helps stop metal corrosion**

Oil by itself won't stop metals from corrosion. Add a small percentage of ATPET 100, one of Atlas' non-metallic corrosion inhibitors, and you'll get excellent protection . . . plus unique advantages of chemical stability and economy.

This material is being used in aircraft engine preservatives, in protective oils and slushing compounds, in marine engine oils, steam cylinder oils, and in diesel fuels.

Humidity tests conducted in accordance

with applicable military specifications, prove the ability of standard preservative oils containing ATPET 100 to withstand exposure far beyond requirements. The material, furthermore, is 100% active. It is completely organic, and leaves no metallic ash residue that might impair combustion in an engine. It works well in some highly refined and treated oils which tend to resist the action of other inhibitors.

We'll be glad to send samples of ATPET 100 for your testing, and to give you test data on its performance.

## **No shortage of sorbitol— Price low and steady**

If you're plagued by recurrent seasonal polyol shortages and unpredictable prices, it will pay you to investigate sorbitol, which belongs to the same chemical family as glycerin and the glycols, and is used in many of the same applications. A straight-chain six-carbon polyhydric alcohol, it is made by hydrogenation of sugars whose abundant supply make sorbitol virtually shortage-proof.

Prices have had a consistent downward trend for over a decade, despite wars and inflation. The following prices are now in effect, (F.O.B. Atlas Point, Del.):

SORBO (70% aqueous sorbitol solution)  
(in tank cars)—15c per lb.  
Powder, drums, 5-ton lots—38c per lb.  
Pellets, resin grade, drums, carload—  
23c per lb.

Literature is available from Atlas on sorbitol's use in paint and varnish resin synthesis, tobacco, cosmetics, mouthwashes and elixirs, candy, adhesives, gaskets, printers' rollers,



## *Man feeds the land*

The importance of nitrogen to the soil is well known. Our agricultural chemicals industry is meeting the nation's rapidly expanding need for this essential element through increased production of ammonia. Applied in fertilizers, or directly into the soil, ammonia is doing much to revitalize the tired earth.

Lummus is currently engineering and constructing a number of ammonia plants in widely separated parts of the world. Our experience, which covers over a half century, is broad in

chemical plants and petroleum refineries. Perhaps our staff and facilities can complement your own on *your* next project.

THE LUMMUS COMPANY, 385 Madison Avenue, New York 17, New York. *Engineering and Sales Offices:* New York, Houston, Montreal, London, Paris, The Hague, Bombay. *Sales Offices:* Chicago, Caracas. *Heat Exchanger Plant:* Honesdale, Pa. *Fabricated Piping Plant:* East Chicago, Ind.

# LUMMUS

DESIGNING ENGINEERS AND CONSTRUCTORS FOR THE PETROLEUM AND CHEMICAL INDUSTRIES



DESERT INDUSTRY: Wecco now owns 6 of the original 10 government-owned units at Henderson, Nev.

## War-Born Baby: Stepping Out in Earnest

Western Electrochemical's production potential essentially depends on two basic products—one it gets, and one it makes.

The former is low-cost hydroelectric power from Hoover Dam; the latter is sodium chlorate made by electrolysis.

Like a runner-off and in stride after a number of false starts—Western Electrochemical Co. (Henderson, Nev.) this week is settling down to a steady pace. In the past six months, the company has doubled its research and development engineering staff; sales are running 11% ahead of 1954's

rate; plant output has been increased to a 45-million-lb./year figure—65% of which now filters into civilian markets.

This, for a company that as recently as 1949 was "living precariously," is a mighty drive forward.

Organized in 1941, to fill a wartime

need for sodium chlorate and potassium perchlorate, Wecco's history has been constantly marked by a struggle for survival.

Its first plant was a relatively small-scale operation in Los Angeles, supplying World War II service requirements. Then what looked like a break came. The government (having shut down its basic magnesium plant at Henderson, Nev.) decided to convert part of its facilities to potassium perchlorate production units—with Wecco as prime contractor.

But barely had these converted units started rolling (only 18,000 lbs. of perchlorate had been produced) when VJ day came. Result: in common with war plants throughout the country, Wecco's Henderson operation was shut down overnight.

**Stocks Liquidated:** For the remainder of 1945, Wecco produced very little in its Los Angeles plant, nothing at Henderson.

But the year was marked by one encouraging development. Company officials bought up large government inventories remaining after the shutdown, started liquidating them in the civilian market.

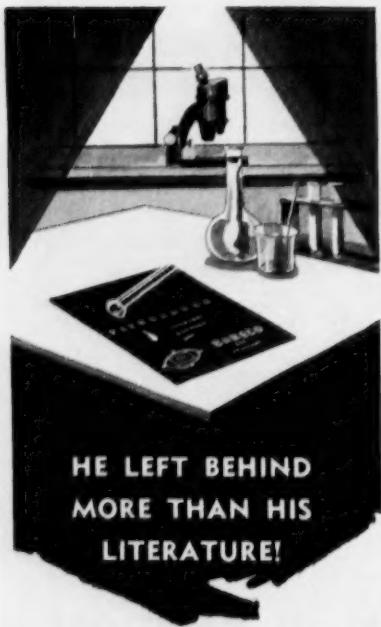
The years 1945-50 were marked by periods of feast and famine.\*

**New Uses Found:** In the late '40s it became obvious that a smokeless



BURNS: Predicts lucrative civilian market for ammonium perchlorate.

\* Early in 1947 there was an upsurge in demand for sodium chlorate, mainly in weed killers used by railroads; in 1946 there was a demand for sale of potassium chlorate to South America and the Far East—an export market that fell off almost as quickly as it had arisen.



**HE LEFT BEHIND  
MORE THAN HIS  
LITERATURE!**

It was an all-day session between the research director, the chief chemist and the regional Bareco wax salesman: Actually, the guy from Bareco just happened to call as the director and chemist were discussing a new wax application, but when the lights in the lab were turned out the three left together. Somebody suggested a steak, and another working day came to a close.

Such a day is not uncommon for a Bareco sales-engineer. He has been trained to know waxes . . . what the different grades will do and what they will not do. He is familiar with the flexibility of his company's wax plant at Barnsdall, Oklahoma. He knows the technologists in that plant are always ready to tackle a new problem which may ultimately give birth to a new grade of microcrystalline wax . . . and perhaps a new industry. The steak was earned because, with his help, the problem was solved.

Bareco encourages you to take advantage of the experience of its staff, simply call your nearest Bareco Oil Company sales office.

*meat*  
**BARECO 1 UNIFORMITY**  
  
**BARECO OIL CO.**  
BOX 2009 • TULSA, OKLA.

## BUSINESS & INDUSTRY . . . . .

*Story begins on p. 29*

propellant to replace potassium perchlorate was required for rocket launching (to avoid site disclosure) and jato units on carrier-borne planes.

Ammonium nitrate was one answer.

But Wecco researchers had developed a process of making more efficient ammonium perchlorate in commercial quantity, jumped at the opportunity to exploit a "potentially lucrative" civilian market.

At present, its ammonium perchlorate units are still operating at only 25% capacity, but President Bob Burns feels that a major expansion is just around the corner.

The outlook's promising for sale of sodium chlorate, too. Reason: the growing use of Wecco's bread-and-butter item in the bleaching, defoliant, and weed-killer industries.

**Pointing the Way:** Wecco's sales today are running at an \$8-million/year rate—an 11% increase over 1954 records. But company officials realize that if this growth rate is to keep up, the company must continue to broaden its civilian product line.

Thus, since the first of the year (led by Vice-President and General Manager Fred Gibson) there's been increased emphasis placed on research and product engineering facilities. A new laboratory has been built at

Henderson; budgets have been raised at its product development lab in Culver City; the company is engaged in resurveying its entire manganese operation.\*

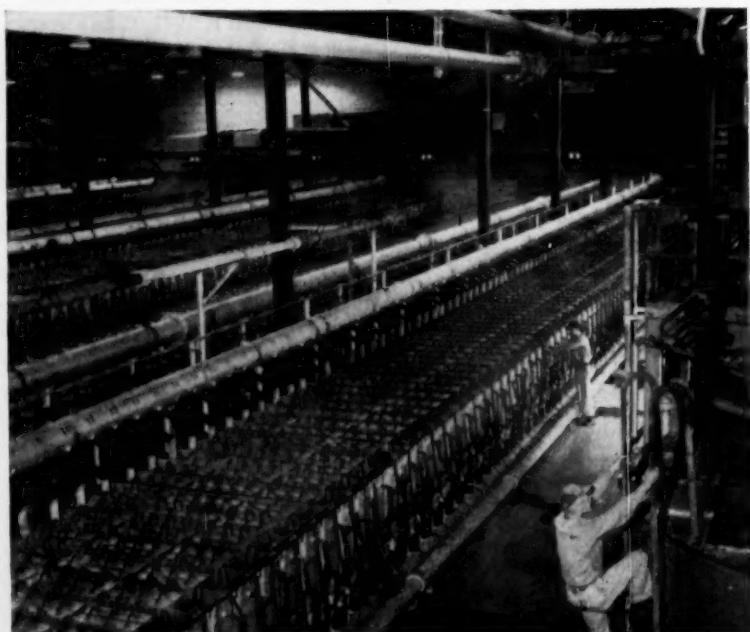
Another source of disquiet—whether American Potash & Chemical Corp. (which last year obtained a 48.2% interest in Wecco) would take over majority control and merge the company with its own operations—seems to have been temporarily resolved, too.

Remaining stockholders, holding more than 50% of the voting stock, have formed a stockholders' trust to last until 1964. So, at least for the present, American Potash will remain a minority stockholder—primarily interested in protecting and developing its investment in Wecco.

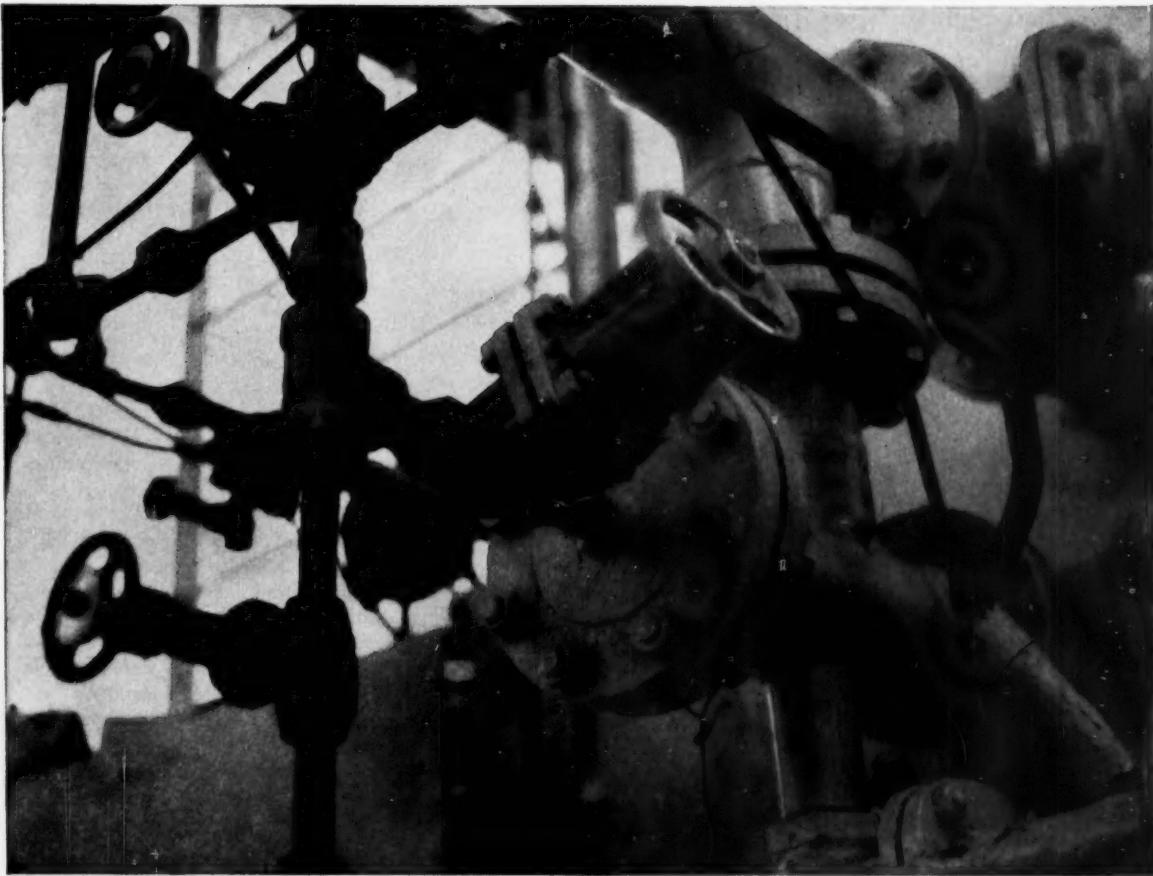
Says President Burns: "Wecco is basic in low-cost power for chlorate manufacture, which in turn is basic to many industries. Only 50% of its facilities are being utilized at present. But the company has strengthened its financial position, and streamlined its production setup.

"Wecco has finally become a part of the civilian chemical industry in its own right."

\* Particularly a 10-ton/day manganese dioxide plant built in 1950 at the Signal Corps' request.



**SODIUM CHLORATE:** Remains Wecco's bread-and-butter product.



Valve of HASTELLOY alloy B, above, and others of the same nickel-base alloy installed in Shell

Oil Company's refinery at Wood River, Ill., to assure adequate resistance to strong corrosives.

## Where steel valves fail in a day... “HASTELLOY” alloy B lasts indefinitely

HANDLING SULPHURIC ACID (pH 2-5) on one side and live steam on the other, the valve in the center, above, lasts indefinitely . . .

Why? Because it's made of HASTELLOY alloy B, one in a series of nickel-base alloys produced and sold under the trade-mark "HASTELLOY", by Haynes Stellite Company, a Division of Union Carbide and Carbon Corporation, Kokomo, Indiana.

The valve illustrated serves the neutralizer unit in a large refinery. A carbon steel valve previously installed lasted only *one day*, which indicates the severity of the service.

This refinery also uses valves of HASTELLOY alloy B on a reboiler that recovers antimony trichloride and aluminum chloride. And, pumps of

HASTELLOY alloy recycle the corrosive catalyst. At the bottom of a light oil treater in this refinery, you'll find a valve of alloy B handling sulphuric acid at varying strengths and temperatures up to 120°F.

Despite corrosive chemicals and live steam, these valves of nickel-base alloys, in most instances, last indefinitely without leakage.

Give your tough jobs to a HASTELLOY alloy or some other high-nickel alloy that you know will resist strong corrosives.

Whatever your metal difficulty, let us give you the benefit of our wide practical experience in this field. Write for List A of available publications. It includes a simple form that makes it easy for you to outline your problem.



**THE INTERNATIONAL NICKEL COMPANY, INC.**

67 Wall Street  
New York 5, N.Y.



HORDIJK, RABIN: In California drug plant, Dutch war hero breaks in as . . .

## Most Spotlighted New Hire of '55

Occasionally a U.S. concern will recruit a European scientist to fill a specialist's billet; but here's a chemical process firm that reached out 7,000 miles to bring over from Europe an unskilled production worker and his family.

The only unusual point about Leendert Hordijk—something that's not at all apparent as you watch him at work any weekday in the compounding department of The Rabin Co.'s drugs and cosmetics plant at Los Angeles—is that he's been honored by three governments (Netherlands, U.S., and Israel) and one religious group as a war hero.

It all began back in 1940 in the fishing village of Monnikendam, about 20 miles from Amsterdam, after Nazi armies had overrun the low countries early in World War II. Hordijk—who was running a small vegetable store joined to his one-story house—witnessed a mass execution of helpless civilians, and determined to do whatever he could to thwart future "liquidations."

**Three Years' Lodging:** His chance came when five Dutch Jews asked for temporary shelter in their attempt to escape arrest by the Nazis. Hordijk took them in, not for one night but for three years, knowing that he'd be killed with his refugees if the watchful occupation troops ever found out.

He built a false ceiling in the attic to hide the refugees in case of search, and rigged an electric warning system from his shop to the attic, where the lodgers were quartered. When Nazi search parties came around, Hordijk displayed a measles quarantine sign.

Later in the war, Hordijk helped two U.S. fliers who had been shot down in the vicinity to get in touch with the underground organization,

thus again risking a fatal run-in with the Nazis. "I was only doing my Christian duty," Hordijk says.

**Five-star Marker:** Since Hordijk had saved the lives of five Jewish people, after the war the Jews of the Netherlands placed over the entrance to his shop five Stars of David. This marker was noticed by Allen Rabin, president of The Rabin Co., who was traveling through that country on an inspection trip to his firm's overseas branches.

When Rabin learned what the marker stood for, he went back to meet the shopkeeper; and during their conversation through an interpreter, Hordijk remarked that he'd like to move to the U.S. "and die an American." Rabin resolved to help him, and kept at it through four years of red-tape in immigration procedures. The breakthrough came this spring when Hordijk was admitted to the U.S. on a special quota and installed his family in a Los Angeles house that Rabin had bought for them, completely furnished.

The story has been featured on television and in print, both here and abroad. Rabin admits that it's been good for his company, but he says he feels a continuing responsibility in the matter. If the story should have anything but a happy ending, or if there should appear to be too much commercialization on the publicity, Rabin figures that the left-wing European press would assail the whole affair as "capitalist exploitation."



QUICK TO ADAPT: After few days in new home, family falls into TV habit.



*Bringing new products into* **FOCUS**



## Is there a market for stacking chair-desks in thousands of over-crowded schools?

### **REINFORCED PLASTICS MAKE LOW-COST PRODUCTION OF SUCH ITEMS PRACTICAL!**

Too many tots . . . too little room. The problem is plaguing school administrators across the country.

Strained facilities would be eased if classrooms could be quickly cleared of desks and work tables when not in use. Such flexibility would be practical with sturdy, light-weight chairs that could be stacked in corners. Removable trays could be anchored securely on the chair arms to double as desks.

The ideal material for this kind of chair-desk is available. By using fibrous glass, bonded with polyester resins, the chair could be molded in one piece . . . without screws to come loose, without splinters to make trouble. It would be shatterproof, colorful, easy to handle, and low in maintenance costs.

Reinforced plastic materials are widely used for sports car bodies, boats, corrugated building panels, as well as for modern furniture.

The basic ingredients for the polyester resins are supplied by Monsanto. These include Monsanto *Styrene Monomer* and Monsanto *phthalic* and *maleic anhydrides*.

If you would like a glimpse of other possible new uses for reinforced plastics, you are invited to request "A Sketchbook of Profitable Products." Write on your letterhead to Monsanto Chemical Company, Plastics Division, Dept. CW-8, Springfield 2, Massachusetts.



*... and  
then  
he thought  
of*

## Non-Polar Hydrocarbon Oils

Many a man has gone to extremes when the best, easiest and least expensive solution is close at hand. Take familiar white oils for example. These non-polar hydrocarbon oils are so closely associated with drug and cosmetic products that their unique properties often are overlooked for other uses. Penn-Drake Non-Polar Hydrocarbon Oils are providing exceptional service in a wide variety of applications—including anti-caking, anti-dusting and detackifying agents, reaction media, special lubricants, aliphatic raw materials, extractants, water repellents.

- odorless
- colorless
- tasteless
- non-reactive
- fluid at low temperatures  
(some as low as -30° F.)
- relatively low cost

*Write for detailed specifications or consult the Penn-Drake Technical Service.*



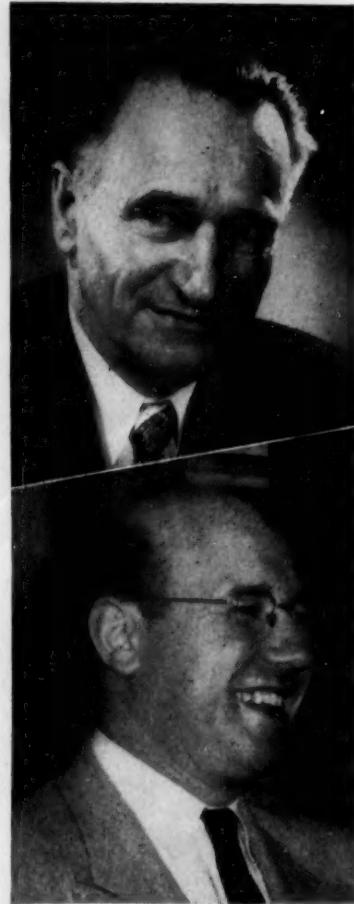
**PENNSYLVANIA REFINING COMPANY**

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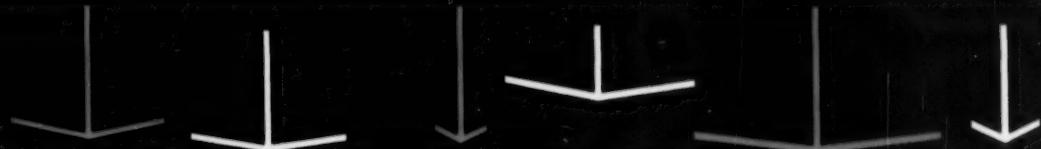
CLARK, AMANN: As presidents of Mine-Mill and ESA, both re-elected.

LABOR. . . . .

**Convention Time:** From now until December, it's meeting and voting season for the labor unions. In Washington, the Engineers and Scientists of America have re-elected President Joseph Amann, who called for greater organizing efforts so that all engineers and scientists will understand "our philosophy of collective action and industrial democracy." The International Union of Mine, Mill & Smelter Workers (Ind.) has re-elected John Clark as president, but has decided that its Canadian section will have "complete autonomy." Canadian members later met in Rossland, B.C., and chose Nels Thibault as their president.

The International Chemical Workers Union (AFL) will hold its 12th annual convention next week in St. Louis, but no election of officers is scheduled until next year.

**There have to be reasons why a company is the leader**



## **Oronite is the leading producer**

### **of detergent raw materials**

To hold the position, year after year, as the world's largest producer of detergent raw materials, Oronite must maintain the highest standards of product quality and service. Beyond this, Oronite conducts a continuous research program on detergents that is second to none. Add together product quality, service, continuous research and competitive pricing and you have the reasons why Oronite is the world leader.

***Have you investigated Oronite as a detergent raw material source?***

Why not talk over your needs with an Oronite detergent specialist. Whatever your requirements — liquid, paste or dry — Oronite has a product worth your checking on. Write or phone the Oronite office nearest you for technical bulletins or request a personal call.

#### **Oronite Surfactants**

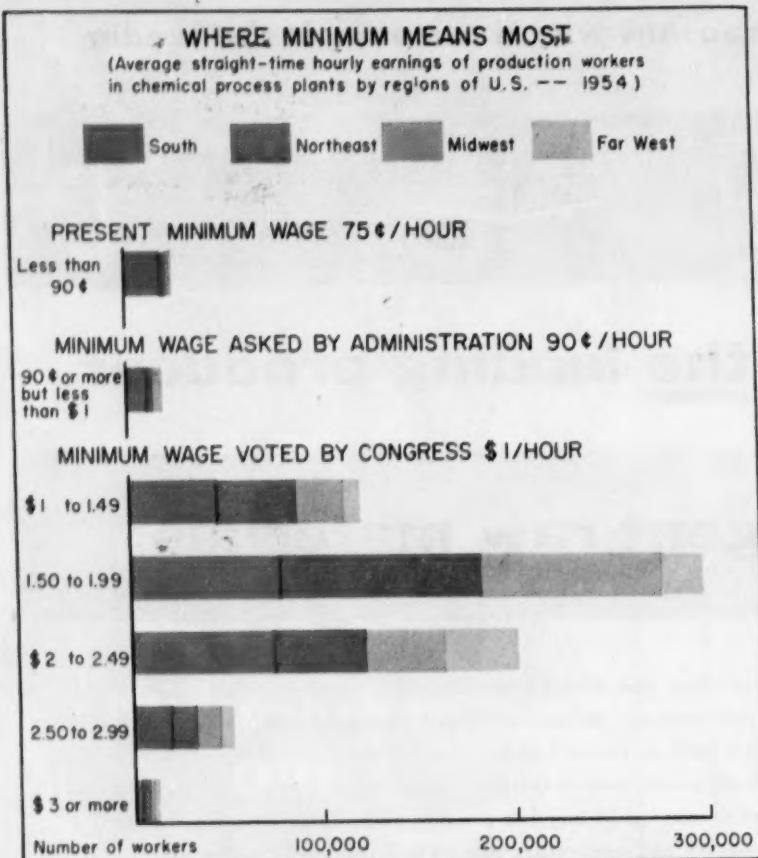
Detergent Alkane  
(Basic Raw Material)  
Detergent Slurry  
Detergent D-40  
Detergent D-40 SF  
Detergent D-40 FG  
Detergent D-60  
Purified Sulfonates  
Purified Sulfonate "L"  
Sodium Sulfonate No. 5  
Wetting Agent  
Wetting Agent "S"  
Dispersant NI-W  
Dispersant NI-O

#### **ORONITE CHEMICAL COMPANY**

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Carew Tower, Cincinnati 2, Ohio



## BUSINESS & INDUSTRY . . . . .



## '55 Pay: Dixie Catching Up

Whatever happens on upping the federal minimum wage rate, the spread between Northern and Southern pay scales in chemical process plants is narrowing as wages climb higher and higher.

Natural economic laws—not government-made regulations or union-bargained contracts—are the prime mover in this leveling-out process.

To chemical companies, the gradual shift in relative labor costs is just one more element to be considered in planning production, new plant construction, and substitution of more automatic equipment.

One law that Congress can't touch—that of "supply and demand"—is exerting even more of a leveling effect on North-South wage rates than the federal minimum wage law, revision of which is expected to be a major order of business in Washington this week.

Multipiant chemical companies are still finding that their Northern labor costs are generally higher, particularly

if their Southern plants are in rural areas. But in the few years since the Korean War boom—a period marked by accelerated industrialization in the South—the spread between pay scales north and south of the Mason-Dixon line has been shrinking as steadily as wage rates have been rising.

Examples of how average weekly earnings in Southern manufacturing plants have been catching up with

or even exceeding Northern averages:

Year	Birmingham	Boston
1954	\$71.68	\$68.54
1951	60.35	62.37
Increase	11.33	6.17
Year	Texas	New York (state)
1954	\$72.04	\$71.50
1951	62.75	64.90
Increase	9.29	6.60

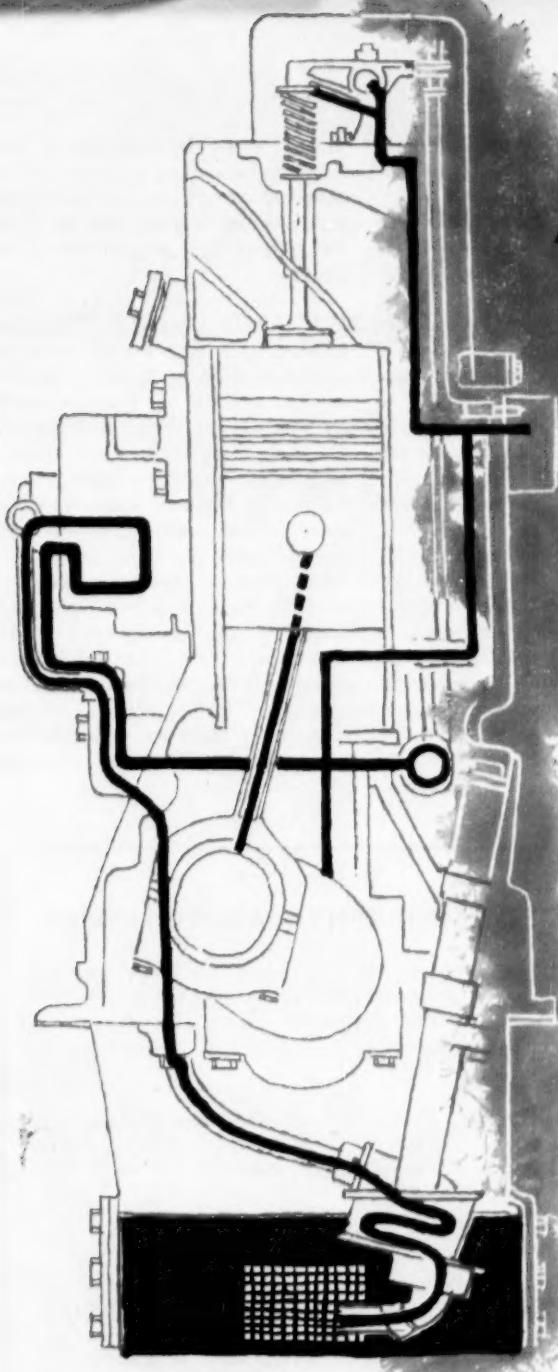
**No Change in West:** Whether the federal minimum wage goes up to 90¢ or \$1/hour, there'll be a moderate increase in Southern chemical wage totals, a slight boost in Northern and Midwestern chemical payrolls, and virtually no change in the Far West (see chart, left).

But this law's effect on Southern labor costs will be minor compared with the wage increments that have been coming naturally as the result of increasing competition on the part of chemical and other industries for Southern labor. At the same time, there's a slackening of demand for industrial labor in the North. While manufacturing employment was falling from 1951 to 1954 in New England, New York, New Jersey and Pennsylvania, it was inching up in Alabama, Georgia, Florida, Tennessee and the Carolinas.

Another leveling factor, of course, is the labor unions' demand for North-South wage parity. So far, only the CIO's United Steel Workers have made much direct headway on this point, but their success not only sets an example for other unions; it also helps to set a higher Southern wage standard that employers in other industries will have to bid against.

**States Take a Hand:** In most of the state legislatures that have been in session this year, legislators have proposed raising their state minimum wage requirements and/or broadening the coverage of such laws. But while both houses of Congress voted by large majorities to boost the minimum wage in interstate commerce, parallel legislation for intrastate business has received rough treatment.

While nearly all chemical process plants are deemed to be in interstate commerce, their pay scales could be indirectly affected by state minimum wage laws. But out of the 27 state legislatures that have debated such laws this year, all but seven have killed the measures for this session.



# AA QUALITY PHOSPHORUS PENTASULPHIDE

**Gives good oil  
greater stamina**

Widely used in making lubricant additives, AA QUALITY Phosphorus Pentasulphide is one of many phosphorus products carrying the AA QUALITY Seal, symbol of highest quality and uniformity. Made from Elemental Phosphorus, 99.9% pure, produced by electro-thermal process in our modern plant, using phosphate rock from our own mines. Quality assured by rigid control from mines to finished product. Service assured by large-scale production and ample phosphate rock reserves. Assured quality, security of supply, prompt service—sound reasons for using AA QUALITY Chemicals. Write today for further information and samples.

## The AMERICAN AGRICULTURAL CHEMICAL COMPANY

Chemical Division: 50 Church Street, New York 7, N. Y.  
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### AA QUALITY PHOSPHORUS PRODUCTS

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Elemental Phosphorus (Yellow-White)  
Phosphorus Red (Amorphous)  
Phosphorus Pentasulphide - Sesquisulphide  
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#### PHOSPHATES

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#### PHOSPHORIC ACID

85% N. F. Grade • 75% Pure Food Grade  
50% Pure Food Grade

#### Agricultural and Other Grades

#### PHOSPHATE ROCK & FERTILIZERS

All grades Florida Pebble Phosphate Rock  
Superphosphate  
Complete Fertilizers

### OTHER AA QUALITY PRODUCTS

#### FLUORIDES AND FLUOSILICATES

Sodium Fluoride • Ammonium Fluosilicate  
Magnesium Fluosilicate  
Potassium Fluosilicate  
Sodium Fluosilicate • Zinc Fluosilicate  
Fluosilicate Mixture  
Ammonium Fluoborate  
Aluminum Fluoride  
Magnesium Fluoride

#### GELATIN

KEYSTONE® Gelatin: Edible, Photographic,  
Pharmaceutical, Technical

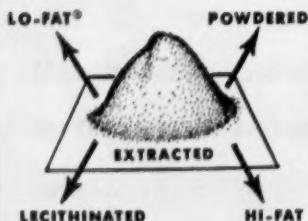
#### OTHER PRODUCTS

Animal Bone Charcoal  
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Sulphuric Acid • Insecticides-Fungicides

# Staley's®

Products from  
Corn  
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...from Insecticide Sprays  
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## SOY FLOURS

A boon to bakers and the food processing industry, Staley's Soy Flours add high quality protein value to all food products. (2 lbs. of Staley's Soy Flour pack the protein content of 6 dozen eggs.) Soy flours help to retain moisture and freshness, add to body and texture, and bring out color and flavor. Lecithinated soy flour supplies needed emulsifier and antioxidant properties. Staley's Soy Flours offer desirable properties to industrial users, too, in paint, insecticide, linoleum, plywood, and paper coating fields.

Processed by special solvent extraction methods, 5 kinds of Staley's soy flours are available. Your Staley representative will be glad to discuss your needs and recommend the grade best suited for your processes. Or write for complete data.

For information about other quality Staley industrial products: Lecithin, Starches, Corn Steep Liquor, Corn Syrups, Soy Oils, etc., write:

**A. E. STALEY  
MFG. CO.**

DECATUR,  
ILLINOIS



## BUSINESS & INDUSTRY . . . . .

And the wage-hour proposals in the other seven states will make virtually no ripple in chemical wages.

Four Far Western states with relatively little industry—chemical or otherwise—have enacted higher minimum wage laws this year. In Idaho, New Mexico and Wyoming, the general minimum will be 75¢/hour; in Nevada, the minimum rate for women workers was raised from 75¢ to 87½¢/hour. Wage-hour bills are still pending in three Eastern states. Proposed minimum wage rates: 90¢ in Massachusetts, 75¢ in Delaware, 70¢ in New Hampshire.

**Chemicals Less Affected:** If the \$1 minimum wage law had been passed at the time the U.S. entered World War II, it would have meant increases for some 81% of the country's production and maintenance workers. By Nov. '48, that fraction was down to about 20%; and up to last year, this figure had shriveled to 10.2%. Of those lowest-paid workers, 56% were

in the South. By comparison, only 5.1% of the workers in plants making chemical, petroleum and coal products were earning less than \$1/hour, and 82% of these people were in the South.

It's clear that the makers of chemicals and allied products will be less affected by a new federal minimum wage law than most other industries will be; and that the chemical workers involved are pretty well concentrated in the South. It also appears that the new minimum wage is coming just as Southern wages—prodded by natural economic forces—are gaining on Yankee pay rates.

For chemical companies—and particularly those with relatively high labor costs—this would seem to be the time to re-evaluate plans for location of new plants, installation of more automatic equipment in existing plants, and allocation of production quotas in Northern and Southern plants.

## LABOR COST GEOGRAPHY: SAMPLE LESSON

(Comparison of manufacturers' average salary and wage rates for selected job titles in eight large industrial communities, 1954-55. Basic data from U.S. Bureau of Labor Statistics.)

### SALARIED EMPLOYEES:

	Accounting Clerk "A" (men)	Payroll Clerk (women)	Stenographer (general) (women)	Senior Draftsman (men)
Highest in:	Dallas	San Francisco	San Francisco	Philadelphia
	<b>\$87.50</b>	<b>\$69.00</b>	<b>\$69.00</b>	<b>\$100.50</b>
Lowest in:	Philadelphia	St. Louis	Memphis	Dallas
	<b>\$78.50</b>	<b>\$54.50</b>	<b>\$54.50</b>	<b>\$80.00</b>
Spread:	<b>11.5%</b>	<b>26.6%</b>	<b>26.6%</b>	<b>25.6%</b>

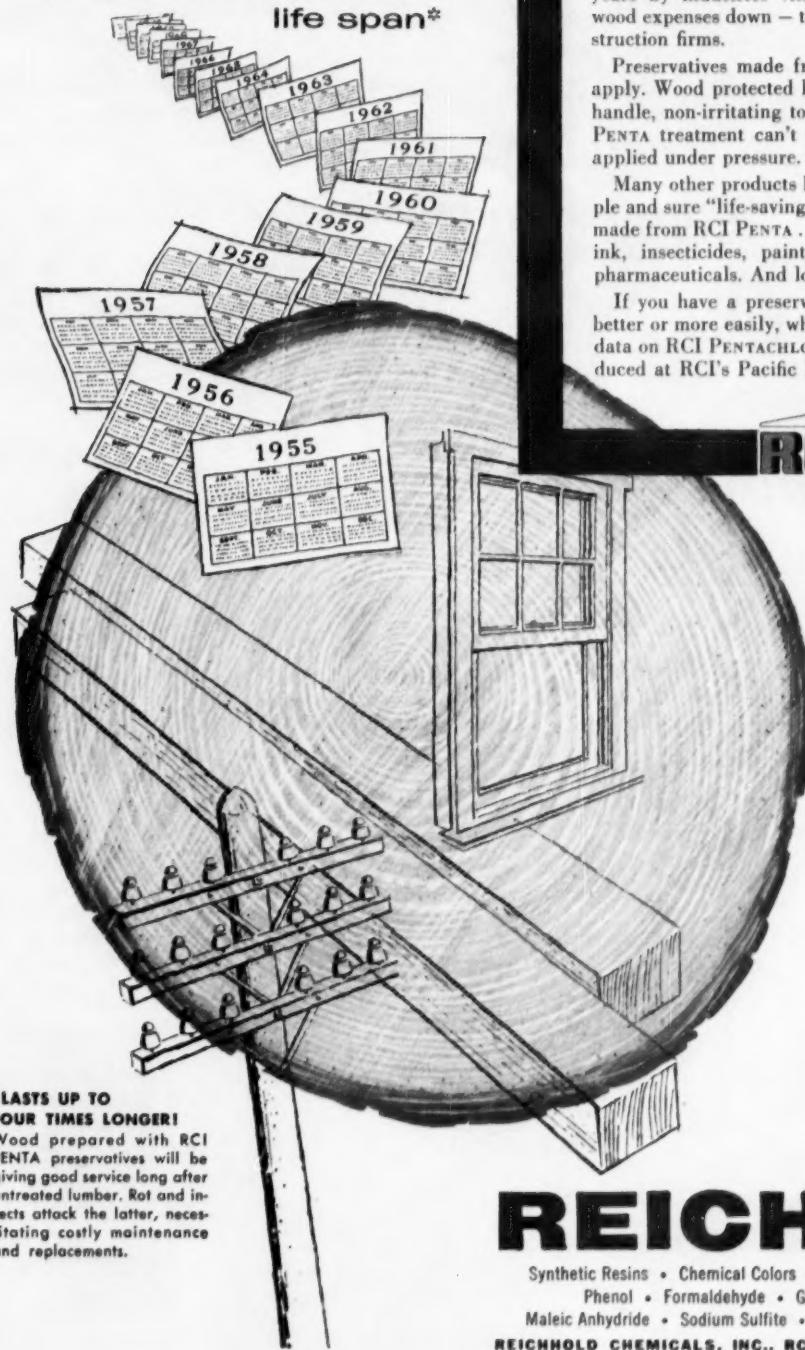
### KOURLY PAID WORKERS:

	Maintenance Electrician	Maintenance Helper	Shipping Packer	Janitors and Porters
Highest in:	San Francisco	San Francisco	Cleveland	San Francisco
	<b>\$2.41</b>	<b>\$2.01</b>	<b>\$1.90</b>	<b>\$1.77</b>
Lowest in:	Dallas	Memphis	Memphis	Memphis
	<b>\$2.15</b>	<b>\$1.20</b>	<b>\$1.16</b>	<b>\$1.18</b>
Spread:	<b>12.1%</b>	<b>67.5%</b>	<b>63.8%</b>	<b>50.0%</b>

# RCI PENTACHLOROPHENOL

stretches lumber's

life span\*



**\*LASTS UP TO  
FOUR TIMES LONGER!**

Wood prepared with RCI PENTA preservatives will be giving good service long after untreated lumber. Rot and insects attack the latter, necessitating costly maintenance and replacements.

● Let's consider just one of the outstanding preservative jobs that RCI PENTA does so well.

RCI PENTA is the wood preservative ingredient that adds years to the life of wood at low cost. It makes possible solutions that keep wood virtually maintenance-free, and reduce wood replacements drastically. Penta formulations make wood *impervious* to rot, termites, water, and free from warping and checking. Penta treatment is proven . . . successfully used for years by industries vitally concerned with keeping wood expenses down — the utilities, railroads, big construction firms.

Preservatives made from RCI PENTA are clean to apply. Wood protected by them is also clean, easy to handle, non-irritating to the skin and paintable. RCI PENTA treatment can't wash out or leach out when applied under pressure.

Many other products besides wood now receive simple and sure "life-saving" treatment with preservatives made from RCI PENTA . . . gelatin, glue, latex, leather, ink, insecticides, paints, paper, food, fabrics and pharmaceuticals. And lots more!

If you have a preservative job that could be done better or more easily, why not write Reichhold for full data on RCI PENTACHLOROPHENOL . . . now being produced at RCI's Pacific Northwest Division in Seattle



Creative Chemistry . . .  
Your Partner  
in Progress

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Synthetic Resins • Chemical Colors • Industrial Adhesives • Plasticizers

Phenol • Formaldehyde • Glycerine • Phthalic Anhydride

Maleic Anhydride • Sodium Sulfite • Pentaerythritol • Pentachlorophenol

REICHOLD CHEMICALS, INC., RCI BUILDING, WHITE PLAINS, N.Y.



## Designed Oratory Next?

Surprising though it might seem, most chemical firms today still depend on "bush beating" methods to fill requests for company speakers. And, considering that nearly 28,300 speaking engagements are open each week for would-be Demosthenes, it's probable that through this oversight they're missing one of their best public relations bets.

Right now, however, there is a faint—but noticeable—stir, indicating that management may be waking up to the potential of its public speakers. Within the past few months, the idea of "speakers bureaus" has caught on in a few more companies. And those firms with long-established bureaus are shaking down current setups, with an eye to possible constructive reorganization.

**Species Vary:** In the few companies where they exist, no two bureaus shape up exactly alike. But some obvious similarities are present.

All company men accepting speaking invitations are asked to clear the date through bureau channels beforehand. Basic reason: if it knows the date well in advance, the bureau can rule out unqualified speakers or suggest substitutes—with the least possible embarrassment to all concerned.

**Fundamental Asset:** Besides clearing speakers and engagements, speakers' bureaus are functional in other ways. Frequently, the bureau can supply its star performers with "canned talks," or help gather trenchant colorful material to dress up routine chats. When original extemporaneous dialogue is called for, the bureau is often helpful in reviewing the outline and clearing subject matter.

Most of the time, companies report, a rough talk outline is sufficient—since bureau selectees are chosen for reliability and the facility to fill speaking bills without overstepping company policy.

But if involved technical talks are necessary, the bureau is able to guide texts quickly through proper channels—with no strain to the speaker.

In addition to performing these services, a speakers' bureau can enhance its usefulness by attracting highly valued publicity for company speakers. Obvious result: greater prestige for speaker and company alike.

**Interest Waxing:** One company that admits its growing interest in organizing company speaking is Carbide and Carbon Chemical Co.

Carbide management right now is mulling over a system to establish sub-bureaus—at various plant sites.

Besides setting up organizational machinery for handling speech dates, the company will hire public speaking instructors to train top supervisors in the rudiments of oratory.

Remarks one Carbide official: "We're pushing creation of our speakers' bureau because we're certain it will further the company's over-all community relations aims."

Dow Chemical Co. is trying its hand along the same line. At Midland, no formal list of speakers is maintained by the Public Relations Dept., but when a request comes in, an orderly procedure is put into operation to locate the most eligible candidate.

First the request is directed to the appropriate assistant general man-



**CONTROL, ACCEPTANCE:** Bureaus stress former; speakers win latter.

# PROVED PERFORMER



Fresh-air lovers must have delighted in this sporty horseless carriage. It's a 1910 Buick, and, as you can see, was built to last. Its ruggedness and dependability have been proved over the years, which find it still in perfect running condition. Esso Petroleum Solvents are proved performers, too. Their quality and dependability have stood the test of years of use, and are backed by long-standing experience and intensive research. Be sure of getting the highest quality that money and modern science can produce. Specify Esso Solvents when you order.



## PETROLEUM SOLVENTS

### You can depend on Esso Solvents for

**MULTI-STORAGE AVAILABILITY**—water terminals in industrial centers.

**MODERN HANDLING METHODS**—separate tank storage, pumping lines, tank cars and trucks are used in all handling operations. Prompt delivery to your door is assured.

**SOLVENCY**—Esso aliphatics and Soltesso aromatics cover both high and low solvency ranges.

**CONTROLLED EVAPORATION**—available in a wide range of evaporation rates with precise characteristics to meet your most exacting requirements.

**FOR TECHNICAL ASSISTANCE**—If you have a solvents problem or want further information on the specifications and characteristics of Esso Solvents—write or call our office nearest you. Our technicians will be glad to assist you.

**SOLD IN:** Me., N. H., Vt., Mass., R. I., Conn., N. Y., N. J., Pa., Del., Md., D. C., Va., W. Va., N. C., S. C., Tenn., Ark., La.

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## BUSINESS & INDUSTRY . . . . .

ager; subjects are "negotiated" with selectee speakers; then the requesting organization is given the go-ahead.

Typical of most oil firms, Standard Oil Co. of California is being pressed to form a speech panel, too. Reason: the glamour of petrochemicals and the significance of the current Middle-Eastern oil crisis is causing an avalanche of speech requests. For the moment Standard of California is making shift with a loose list of available speakers, plans a full-fledged bureau soon.

Even Kaiser Aluminum & Chemical Corp., which claims to be "one of the least-speech-making chemical companies in the U.S.," is thinking about the speech bureau idea.

**Warning Noted:** While it's generally agreed among those chemical companies now sporting speaker programs that many advantages accrue from organization, they caution against falling into one pitfall:

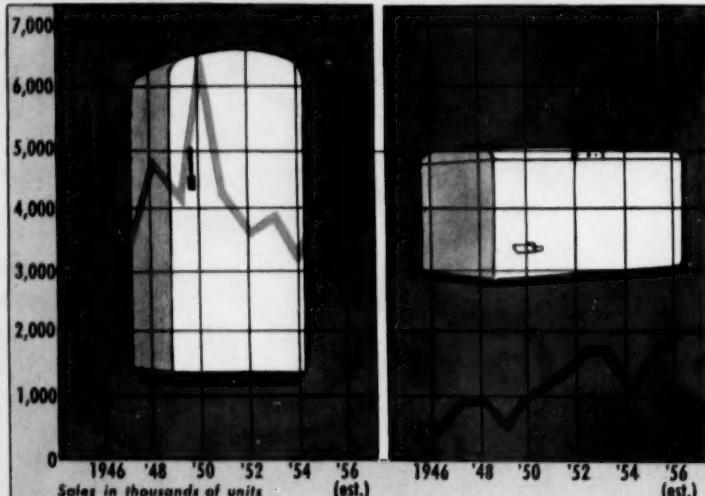
The tendency is strong for any hard-pressed bureau to use good performers overtime. The best way to make sure this won't happen: supply enough staff members to insure time to search out a steady flow of fresh speaking talent.

By spreading the work load of speaking engagements all along the line, speech bureaus not only reduce "extracurricular" hours required of "a chosen few" but also contribute to well-grounded industrial relations.

## IMPACT

### REFRIGERATOR, FREEZER SALES

### UP USE OF CHEMICALS



### Chemical Hot Spot

SPURRED ON BY increasing consumer sales, refrigerator and freezer appliances today stack up as favorite sales target for chemical suppliers.

In 1954, such units consumed over 1,800 tons of fluorinated hy-

drocarbon refrigerants, 47,500 tons of high-impact plastics (mostly polystyrene), and some 30,000 tons of vitreous enamels (for interiors).

Competition among suppliers was fierce, but dollar value rewards were considerable.

...AMONG SOME

# 3500 ORGANICS

## Fuss and bother cheerfully undertaken ...

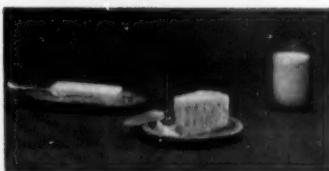
Don't think that *all* Eastman Organic Chemicals are manufactured out of whimsy, just to see whether or not anybody wants to buy them. Some of them, yes. For others, where the volume of demand stands in a certain relationship to the degree of fuss and bother required in the preparation of the item, business isn't bad. If the volume of one of these items ever reaches the point at which the fuss and bother lose their frightfulness for other chemists, we sort of lose interest in it. This weird policy is one of the marks that distinguish Eastman Organic Chemicals from other chemical houses, including our own corporate relatives of similar name who make bulk chemicals, think in terms of carloadings, and don't get as excited over a 10-kilo order as we do.

A typical variety of fuss and bother that a grateful clientele is glad to have us suffer for them is encountered with our eight aliphatic acetates: *Methyl Acetate* (Eastman 520), *n-Propyl Acetate* (Eastman 747), *iso-Propyl Acetate* (Eastman 279), *sec-Butyl Acetate* (Eastman 805), *n-Butyl Acetate* (Eastman 710), *iso-Butyl Acetate* (Eastman 49), *n-Amyl Acetate* (Eastman 2360), and *iso-Amyl Acetate* (Eastman 298).

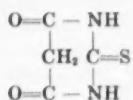
You can buy these esters in the "solvents" market in excellent quality with no more than 10% free alcohol; but excellent as these commercial solvents are, we don't dare even use them as starting points for purification. Instead, we start from the purest grades of the corresponding alcohols that we can produce, esterify with a large excess of our own pure acetic anhydride, and from the equilibrium mixture spin out a long chain of stratagems to bring the alcohol generally below 0.1%, convert all the excess anhydride to acid, and then get rid of all the acid and water. There is a matter of judgment involved in all this; and, since there is no such thing as absolute success in matters of judgment, all we can do is to offer the result as characteristic of the

fruits of our best judgment. The judgment, and the fuss and the bother drive the price up, but it's still a bargain to chemists responsible for such ultra-meticulous enterprises as the preparation of TV picture tube screens, pharmaceuticals, or fluids for precision instruments.

## For Barbara ...



According to a charming tale, the great von Baeyer named barbituric acid for Barbara, a friend of his. Then someone came along and replaced one of its three ketonic oxygens with sulfur, creating 2-thiobarbituric acid.



Then someone else added 2-thiobarbituric acid to fructose and got a yellow precipitate. Then some medical school people obtained an entirely different orange-red precipitate by reacting 2-thiobarbituric acid with incubated brain tissue and proceeded to prove that the reaction was with a 3-carbon fragment of an oxidized double-bonded fatty acid moiety of the lecithin in the tissue. Then some dairy chemists conceived the idea that this property of 2-thiobarbituric acid might make a convenient test for oxidative deterioration in fats. Then some agricultural chemists worked out the details for using 2-thiobarbituric acid to find out objectively when cheddar cheese has gone bad. Or powdered whole milk or butter. Then we prepared a procedural abstract of their method to give away in order to help us sell our 2-Thiobarbituric Acid (Eastman 660) at \$2.25 for 25 grams.

## Mopping up ions ...

One of the canons of polite industrial society is that you don't name your competitors in print. This prevents us from rendering due obeisance to a very fine chemical company with whom we happen to be at swords' points in another field.

In one of their recent ads they call attention to their brand of activated carbon for removing trace metals indirectly by adsorbing organic precipitates of unwanted ions. For example, to mop up iron or copper from a solution, one stirs in about 25% more than the stoichiometric proportion of mercaptobenzothiazole, then adds about 1% of the solution weight of high purity carbon. Our contemporary finds there is no residual contamination because their carbon adsorbs the excess reagent as well as the complexed metal. Other precipitating organic reagents, such as dimethylglyoxime for nickel, should work in the same way, they suggest. Chelate compounds, on the other hand, are not adsorbed well on carbon.

Perhaps it will not be resented if we crowd in on this act to remind whoever wishes to develop this technique for himself that 2-Mercaptobenzothiazole is obtainable as Eastman 2638, Dimethylglyoxime as Eastman 98, 2-(o-Hydroxyphenyl)benzothiazole as Eastman 7005 (for copper), Nitron as Eastman 1077 (an atrociously complex complexing agent which precipitates  $\text{NO}_3^-$ , in case you want to see whether the scheme works with anions).

We can also supply Carbon, Decolorizing, which we obtain from sources other than the people who set us off on this tack. Ethics restrains us from recommending it here.

---

Our shop is open. Our inventory shows some 3500 Eastman Organic Chemicals. You buy by mail from our List No. 39. You get a copy from Distillation Products Industries, Eastman Organic Chemicals Department, Rochester 3, N. Y.

*Price quoted is subject to change without notice.*

**Eastman Organic Chemicals**  
Also...vitamins A and E in bulk...distilled monoglycerides



**Distillation Products Industries** is a division of **Eastman Kodak Company**



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The Traveletter System, moreover, is fool-proof and completely safe. It has further benefits for you in that it simplifies home office accounting, reduces cash advances, ends the need for expense checks, and gives you greater control over travel expenses. Used by large and small American industries for more than 60 years, its renewal rate among users is greater than 96.5%! Here are the names of a few of those users —

American Cyanamid Co.  
Ayerst Laboratories  
Bayer Co.  
Commercial Solvents Corp.  
Cook-Waite Laboratories, Inc.  
Diamond Alkali Co.  
International Salt Co., Inc.  
Lakeside Laboratories, Inc.  
Pennsylvania Salt Mfg. Co.  
Chas. Pfizer & Co.  
Stauffer Chemical Co.  
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Whitehall Pharmacal Co.  
Winthrop-Stearns, Inc.  
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We'd like to send you a fully descriptive brochure that will show you specifically how Traveletter can directly benefit your traveling men and your company. Write Traveletter Corporation, Greenwich, Conn.

**TRAVELETTER**  
SINCE 1894

## BUSINESS & INDUSTRY . . . . .



WIDE WORLD

### Twentieth Century Cargo

WHEN ARCHEOLOGICAL studies on Pharaoh Cheops' 4,700-year-old solar ship resume later this year, use of chemicals will have furthered investigators' aims.

To halt deterioration, all fabric and ropes removed from the artifact (*below*)—biggest and oldest of its kind yet discovered — have been treated with synthetic polyesters.

Vinyl acetates and methacrylates will act as adhesives, consolidating and strengthening delicate fibers.

Furthermore, quantities of DDT and rodenticide chemicals are keeping unwelcome insects and pests at bay while excavation work at the site (Cheops' Great Pyramid, Giza, Egypt) is temporarily halted during summer months.



WIDE WORLD

# SWIFT'S RED OILS INVITE COMPARISON!

SWIFT'S RED OILS				
Characteristics	Oleic Acid No. 905	Red Oil No. 805	Red Oil No. 810	Saponification Grade Red Oil
Ther (°C).....	5 Max.	5 Max. 30 Y/3 R. Max.	8-10 30 Y/3 R. Max.	18 Max. 95% Min.
FAC.....	10 Y/1 R. Max.	7 Max. 98-102%	7 Max. 97-101%	21 Max. 190 Min.
Color (Levibond 1 1/4" Col.) (Levibond 5 1/4" Col.).....	98-102%	195-204	193-202	83-90
FFA (As Oleic).....	90-96	88-95	88-93	193-203
Acid No.....	198-204	194-204	194-204	3% Max.
Iodine No.....	1.0% Max.	3% Max.	2.5% Max.	3% Max.
Saponification No.....				
Unsaponifiable.....				

✓ Not too long ago, Red Oils, like many staple industrial materials, were ordered simply as red oils . . . one or two grades served a wide range of needs. Specifications were of a broad and flexible nature.

Today, to meet the competitive needs of modern industry, Swift & Co. has developed four standard grades of Red Oil.

Check the specifications above and see which product fits your requirements. Because of their exceptionally good color and color stability many have found they could use Red Oil No. 805 and No. 810 in place of premium priced products, and here's why:

✓ Write for new 8 page folder on Swift's Industrial Oil Products  
 Oleic Acid (Red Oil) • Animal Fatty Acids • Vegetable Fatty Acids • Stearic Acids •  
 Hydrogenated Fatty Acids • Lard Oil • Neatex (Swift's Neat's-foot Oils)  
 • Swift's Sperm Oils • Spermaceti U.S.P. • Monoglycerides • Sulfonated Oils • Textile  
 Processing Oils • Anti-Foam Agents • Glycerine • Tallow • Palmex (for Steel Mills) •  
 Hydrogenated Glycerides.

Made from the finest raw materials available, Swift's Red Oils are produced under highly controlled conditions. A unique low temperature solvent process permits the selective extraction of color bodies and other impurities. The manufacturing control made possible by such a process is your assurance of a reliable source for a wide variety of "application pure" Red Oil products.

Yes, for obscure as well as for common application, Swift's Red Oils invite comparison. So, next time you buy, don't order Red Oil . . . specify Swift's in the grade tailored to your needs. Write for a trial order at quantity price.

ONE TRIAL IS BETTER  
THAN A THOUSAND CLAIMS

USE THIS COUPON FOR FURTHER INFORMATION

Swift & Company, Industrial Oil Dept.  
 1840 165th Street  
 Hammond, Indiana

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Please send data on the following products:

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Name \_\_\_\_\_ Title \_\_\_\_\_

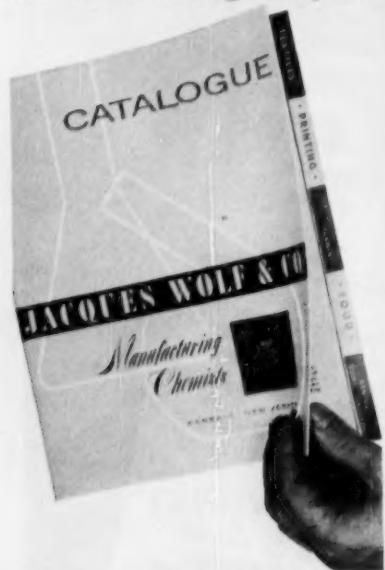
Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



# A Complete Chemical Specialties Inventory at Your Fingertips!



Throughout the pages of the new, completely revised and simplified Chemical Catalog you will find a distinctive and definite line of Jacques Wolf auxiliaries in condensation—enzymes, detergents, water-repellents, wetting agents, oils, gums, and many other specific chemicals for the textile, leather, food, brewery, lithographic, pharmaceutical, cosmetic and allied industries.

Over more than a half century Jacques Wolf & Co. has kept pace with the ever-changing and new demands of industry—accumulating a vast store of experience and knowledge that can be of extreme value to every processor who uses such auxiliaries.



0730

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Please send me the new Jacques Wolf Catalog—  
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## BUSINESS & INDUSTRY . . . . .



**FERTILIZER UNITS, VIENNA:** Heart of Austria's chemical industry, struggling to break out from under the yoke of Communism.

## FOREIGN . . . . .

**Expansion/Austria:** What may prove to be the turning point of Austrian chemical expansion—at least for the present—is under discussion in Vienna this week.

Setting off the controversy: an application by Parke, Davis & Co. (Detroit) for a license to produce Salk vaccine in Austria.

The application was originally turned down by the Ministry of Social Administration early last month; later the decision was made to refer the application to the Austrian Council of Ministers.

Meanwhile, however, a furor has been raised by the Austrian Communist press over "the contemplated invasion of foreign capital."

Therefore, even if Parke, Davis' request is granted there's every indication the issue will remain a "hot topic" for months to come.

**Chemical Specialties/Colombia:** A plant will be built in Medellin, Colombia, to turn out synthetic resin resins under license from Borden Co.

Due to be operated by General de Productos Químicos Fadeles, S.A., the plant will turn out a host of products for use in the leather, paint, textile and adhesive industries.

**Ammonium Sulfate/Japan:** Japan will produce an estimated 2,711,000 tons of ammonium sulfate during the 1955 fertilizer year (Aug. '55 to July '56),

according to latest government plans.

Of the total, 611,000 tons will be set aside for export—the remaining 2.1 million tons will be ticketed for home consumption.

**Expansion/India:** Highlights of the industrial expansion envisioned under India's second five-year plan include the construction of two or three new fertilizer plants, a second DDT factory, and a plant designed to produce synthetic oil.

One of the new fertilizer plants will be built at Bhakra Nangal, will turn out ammonium nitrate; the DDT units are scheduled to go up at Alwaye, in Travancore-Cochin.

Total increase in fertilizer production contemplated: 170,000 tons/year; current Indian fertilizer manufacturing capacity: 100,000 tons/year.

**Japanese-Chinese Trade:** Japan will import 600,000 tons of salt from Red China under the private Japanese-Chinese trade agreement signed in Tokyo last May.

In return for the salt, Japan will export chemicals and rayon to China.

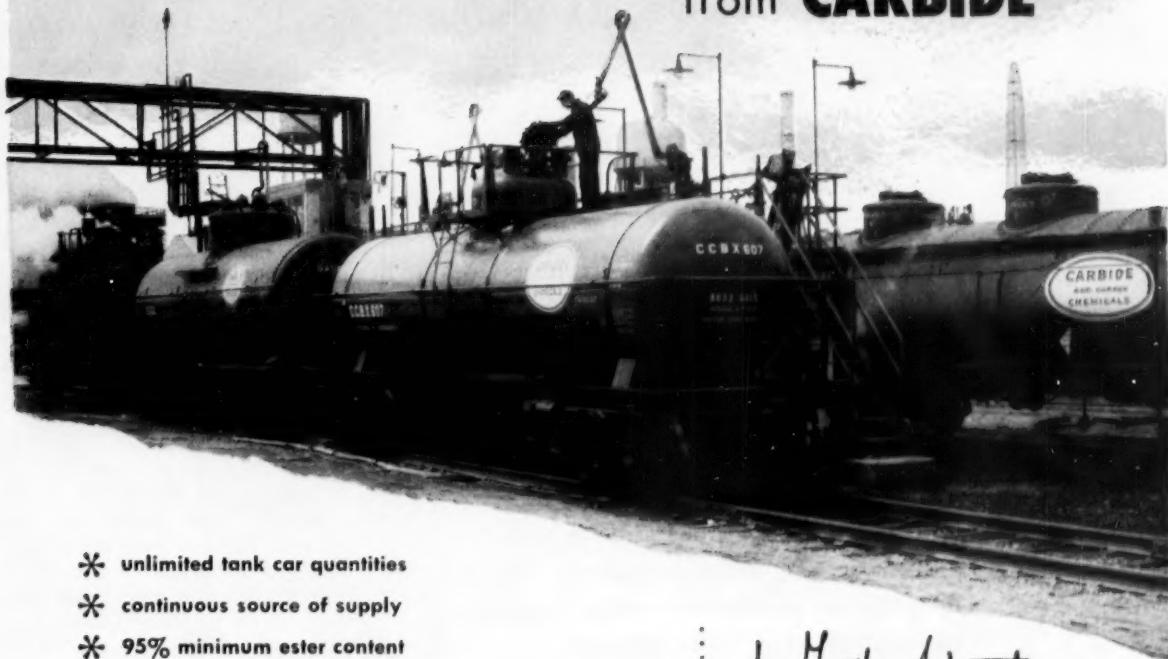
Import price of the salt/ton (with a purity content of 89-90%): 38 shillings f.o.b.

**Tannin/Venezuela:** Venezuelan industrialists are negotiating with a U.S. firm concerning the establishment of a tannin plant in eastern Venezuela. No definite site has, as yet, been selected for the proposed plant.

**THERE'S NO LIMIT** to the supply of

# **PRIMARY AMYL ACETATES**

from **CARBIDE**



- \* **unlimited tank car quantities**
- \* **continuous source of supply**
- \* **95% minimum ester content**

A new route to synthetic amyl acetates from CARBIDE's OXO unit, offers you a consistent, uniform product meeting rigid specifications. Primary amyl acetates is a mixture of normal amyl acetate, 2-methylbutyl acetate, and 3-methylbutyl acetate.

As a high boiling lacquer solvent, it offers: slow evaporation rate—high dilution ratio—excellent blush resistance.

Its low water solubility and narrow boiling range make it an excellent extractant for penicillin and other important antibiotics.

These general solvent properties will help you evaluate primary amyl acetates as a lacquer solvent for your formulations.

Relative Evaporation Rate (n-butyl acetate = 100) . . . . . 42

Toluene Dilution Ratio . . . . . 2.3

Naphtha Dilution Ratio . . . . . 1.3

Blush Resistance, % R.H. at 80° F. . . . . 91

Tentative Specifications		Typical Analysis
0.873—0.879 . . . . .	Specific Gravity at 20/20°C . . . . .	0.8761
135—150°C . . . . .	Boiling Range at 760 mm . . . . .	140.3—148.3°C
95% min. . . . .	Purity (ester content) . . . . .	96.5%

*for further information*

on primary amyl acetates derived from OXO chemicals, call or write the nearest of CARBIDE's 25 sales offices. In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal and Toronto.

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AND CARBON  
**CHEMICALS**

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B & I. . . . .



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An ARco corrosion-preventing rubber lining or coating can be delivered right to your plant . . . anywhere in the country . . . ready to fit your equipment regardless of size. Yes, we do deliver the job packaged, literally speaking.

**ARco Field Service Units come to your plant completely staffed, completely equipped to make your chemical processing equipment corrosion-proof . . . with advanced procedures and controlled rubber compounds.**

The performance of ARco Field Service Units has proven dependable. This proof is their outstanding record of successes in combating corrosion, substantiated by savings in time and equipment realized by industrial management.

Don't wait, let us deliver the ARco package that will prevent this. Write, wire, or call for complete details on ARco Field Service. **Automotive Rubber Company, Inc., 12596 Beech Road, Detroit 39, Michigan.**

*detroit • kalamazoo • houston*



WIDE WORLD  
**LAWMAKER BROOKS:** On Texas City relief bill, blast at 'big loophole.'

L E G A L . . . . .

**Texans' Tiff:** There's a new hitch in the plan to have the federal government compensate persons and companies for deaths, injuries and property damage in the 1947 ammonium nitrate explosion at Texas City. While other members of the Texas Congressional delegation are supporting the Thompson-Daniel bill that has already been passed by the Senate, Rep. Jack Brooks of Beaumont is calling for that bill to be ditched in favor of the Forrester substitute, which would give priority to individual claimants and set a limit of probably \$20,000 per claim. Brooks says the Thompson-Daniel measure has a "multimillion-dollar loophole" that would benefit six big corporations that had plants in the area and various insurance companies that so far have paid Texas City explosion claims totaling \$41 million.

**Product Liability:** With an ever-increasing number of chemical products being sold for home use, manufacturers are having to pay closer attention to product liability lawsuits. Among current cases:

- A New Jersey state court has ruled that while a label must give proper directions for use and a warning about possible injury, it need not list the chemical ingredients and specify the antidote or neutralizing agent to be used in case of injury. The court dismissed a suit based on use of an



### *Putting a colorful flair in a highland fling*

Color is the thing that counts in a Scot's plaid, just the right color that is. And just the right color, uniformly right, is the style note that counts in making many a fabric a sales hit.

Color control begins in the dye bath . . . and a key to this color control lies in large part in synthetic detergents such as the Ultrawets. The Ultrawets, members of the family of petrochemicals made by The Atlantic Refining Company, have a natural flair for making dyes behave. That is, Ultrawets make the dye bath wetter . . . help the dye penetrate the fibers more easily and more evenly. Result . . . more uniformly dyed material. That's the reason you see the miniature refinery as part of the picture.

Atlantic makes a broad range of petrochemicals which industry of all kinds is using in a variety of new and different ways to produce new and better products. Our sales engineers will gladly work with you to improve your present products, develop new ones—or cut costs. Write for complete information to The Atlantic Refining Company, Dept. H-8, 260 S. Broad Street, Philadelphia 1, Pa.



Philadelphia, Providence, Charlotte, Chicago

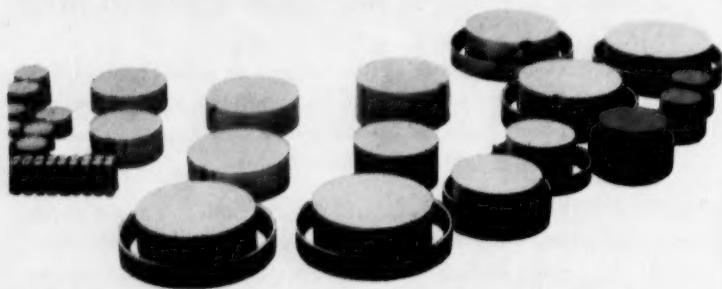
In the West: L. H. Butcher Co.

In Canada: Naugatuck Chemicals Division of  
Dominion Rubber Company, Ltd.

In Europe: Atlantic Chemicals SAB, Antwerp, Belgium



## Protection from CONTAMINATION



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### B & I. . . . .

alkaline cleaner whose label warned against contact of hands.

- One or more damage suits are expected in Rochester, N.Y., following distribution of a certain cleaning solution in plastic spray bottles. After one housewife suffered severe skin burns from using the product, City Chemist John Temmerman investigated, found the solution contained hydrofluoric acid. He said the bottles should be "more adequately labeled."

- One product liability suit directed only against the retailer and not against the manufacturer is the \$150,000 action filed in Oklahoma City by a man whose wife died after taking a preparation sold as cough medicine. It's alleged that the pharmacist carelessly made up the prescription with potassium cyanide instead of potassium citrate.

**Railroad Wins:** South Carolina's state supreme court has reversed a lower court's order that the Southern Railway pay \$4,635 to the Charleston agent of Chilean Nitrate Sales Corp. for three freight cars of nitrate destroyed by fire last December. The high court held that, although the agent had delivered invoices to the railroad company, the nitrate itself was still in the agent's possession.

### KEY CHANGES . . .

**W. H. Hoffman**, to president, **M. L. Rosenberg** and **R. S. Crockett**, to vice-presidents, and **L. K. Wall**, to secretary and treasurer, Neches Butane Products Co. (Port Neches, Tex.).

**James A. Hughes**, to treasurer, Diamond Alkali Co. (Cleveland).

**H. Vise Miller**, to executive vice-president, Armour Fertilizer Works (Atlanta).

**J. C. Knochel**, to vice-president, Trade Sales Division, Devoe & Raymonds Co., Inc. (Louisville).

**W. Samuel Carpenter, III**, to assistant director, sales, Petroleum Chemicals Division, Du Pont Co. (Wilmington).

**E. M. Skytt**, to general manager, Pacific Northwest Division, Reichhold Chemicals, Inc. (Seattle).

**David H. Dawson**, to director, vice-president, and member of the executive committee, Du Pont Co. (Wilmington).



Conveyor belt and  
storage bins at  
loading docks

# Crude Sulphur for Industrial Use

*from  
the  
properties  
of*

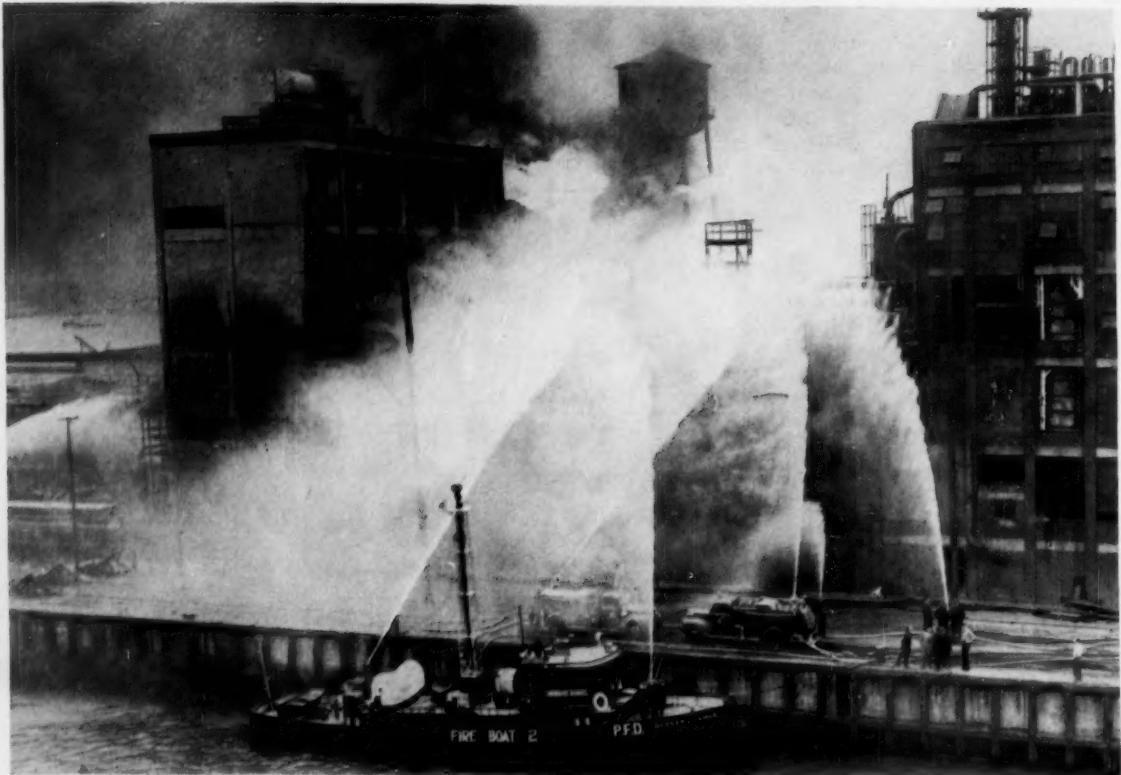
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# PRODUCTION . . . . .



AT 8 A.M., the fire starts at Publicker's sprawling alcohol plant.

## How to Get Back in Production

## While the Fire Still Rages



PRODUCTION resumes in 10 hours, although fire continues for 6 days.

Normally, when fire breaks out in your plant, you concentrate first on localizing the danger and putting the fire out. Then you start to worry about getting back into production. Publicker Industries, however, found that with a well-conceived plan, it's possible to think about both things at the same time. And, under the right set of conditions, it's even possible to have the plant back in operation long before the fire is out.

That's what happened in the 6-alarm, \$1.5-million fire at its Bigler St. (Philadelphia) alcohol plant:

It was 8:15 a.m. on Thursday, May 26. An explosion shook top floors of a five-story steel and reinforced-concrete warehouse and denaturing plant. Within 10 hours, the plant was back in full production, in spite of the fact that the fire continued to burn for 6 days.

*It pays to...*

# Dry Natural Gas with Davison Silica Gel!



### Data Proves That Silica Gel Is Best Drying Agent For Natural Gas

Field performance data shows that Davison Silica Gel is the superior drying agent for natural gas. No other drying agent offers all the advantages to be found in Davison Silica Gel.

- High capacity for moisture
- Resistance to fouling gives long desiccant life
- Economical to use because of fewer reactivations
- Dries to lower dew point
- High capacity of elevated temperatures—  
110-120°F.
- Excellent attrition resistance
- Low pressure drop

For detailed information and field performance data on the use of Davison Silica Gel for the drying of natural gas, write for Technical Bulletin No. 201.

Progress Through Chemistry

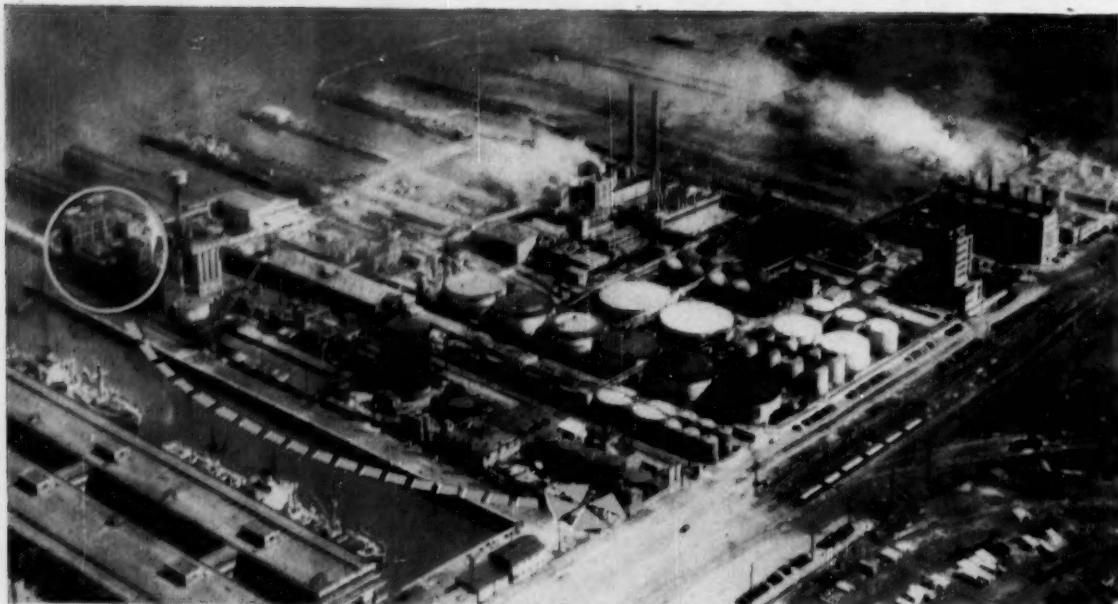
**DAVISON CHEMICAL COMPANY**

Division of W. R. Grace & Co.  
Baltimore 3, Maryland

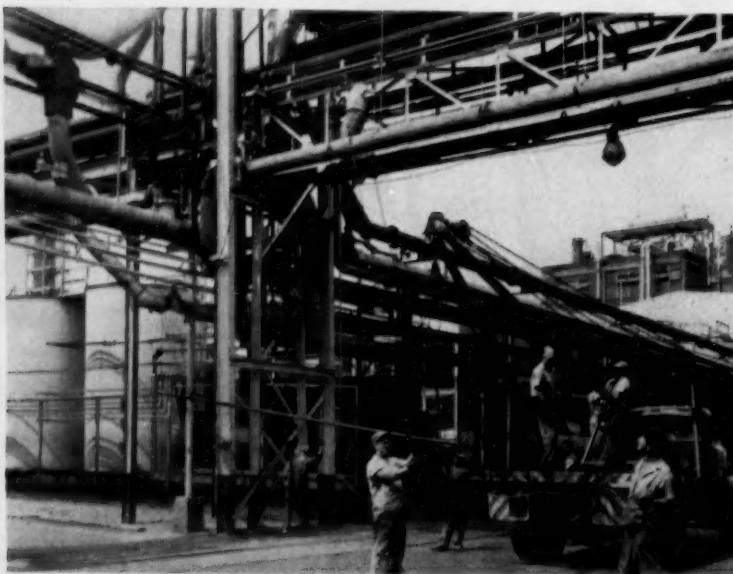
PRODUCERS OF CATALYSTS, INORGANIC ACIDS, SUPERPHOSPHATES, TRIPLE SUPERPHOSPHATES, PHOSPHATE ROCK, SILICA GELS AND SILICONFLUORIDES,  
SALE PRODUCERS OF DAVCO® GRANULATED FERTILIZERS.

**Flexible Piping Permits Rerouting Production**

Story begins on p. 52



WHEN FIRE HIT, storage tanks were pressed into service as operating vessels.



PIPE bridges, banks are basis for flexibility, which made shift possible.

**The secret of Publicker's** speedy production recovery lies in having not only a well-thought-out plan, but also the personnel to carry it through. All told, there were almost 500 people on shift when the fire broke out, 29 in the warehouse and denaturing plant itself. As soon as the first explosion occurred, an alarm went out to notify

plant headquarters and the Philadelphia Fire Dept. As one explosion after another shook the building, men in the adjoining still house and boiler room stuck to their posts, gradually shut down the operations. The rest of the plant remained in production, although in a state of alert.

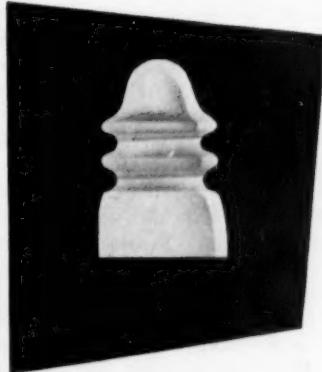
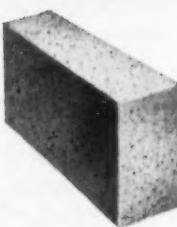
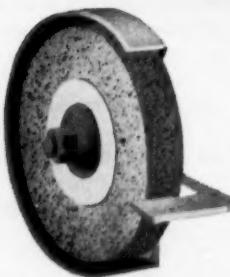
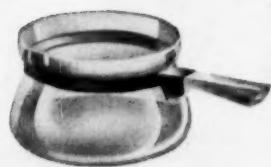
Meanwhile, as soon as they learned

of the fire, Walter Lehman (vice-president, production) and Ed Brumberger (plant manager) got together to chart out "Operations Reroute." Here's what they did:

Storage facilities in the northwest end of the plant were converted into operating vessels. A steam plant in the area was tied into the line to provide power. Also tied in were a temporary still house and newly designated receiving tanks. Denaturing facilities necessary for production were supplied at several places; some denaturing was carried out in tank cars and tank wagons.

The quick changeover, of course, was made possible by the special piping arrangements that Publicker has evolved over the years to make its production schedule flexible enough to meet the changing demands of the market.

Throughout the plant are a multitude of pipe bridges and banks. By shifts and changes in junction points and pipe adjustments, the flow of materials can be routed to or around any given area. In fact, for the complete change, only one truckload of extra pipe was used. All the rest was already set up; the desired rerouting was then accomplished by simply changing the existing hook-ups.



## REYNOLDS CHEMICALS

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Use DAXADS whenever a dispersion of insoluble, finely-divided particles suspended in water is specifically required.

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DAXADS may speed production or improve quality or both. For instance, they can increase color intensity of a dried film. Or make a smoother coating. They can increase covering power or solids content.

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**POLYFON** — a sodium lignosulfonate — imparts strength and stability to chemical foams. In fire-fighting formulas of the sodium bicarbonate-alum type,  $\text{CO}_2$  foams hold well with added POLYFON. Also this lignin derivative resists mold growth, dry or in solution.

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West Virginia Pulp  
and Paper Company

CHARLESTON A, SOUTH CAROLINA

## PRODUCTION . . . . .

Story begins on p. 52



PLANNERS LEHMAN AND BRUMBERGER go over blueprints of installations to replace those destroyed by fire.

### Proof Is in the Test

Both Lehman and Brumberger are proud of the fact that in spite of the estimated \$1.5-million damage caused by the fire, only 170,000 gal. of industrial alcohol were lost. But they feel they learned something from the fire, too. Despite the success of their rerouting operation (*see preceding page*), they feel that should the need arise again, it can be done better. For instance, the company is now dismantling the fire area and is proceeding with plans to build new receiving and denaturing facilities elsewhere in the plant. These new installations will be even more dispersed so that material can be received and denatured in three or four parts of the plant without a need for going on an emergency basis.

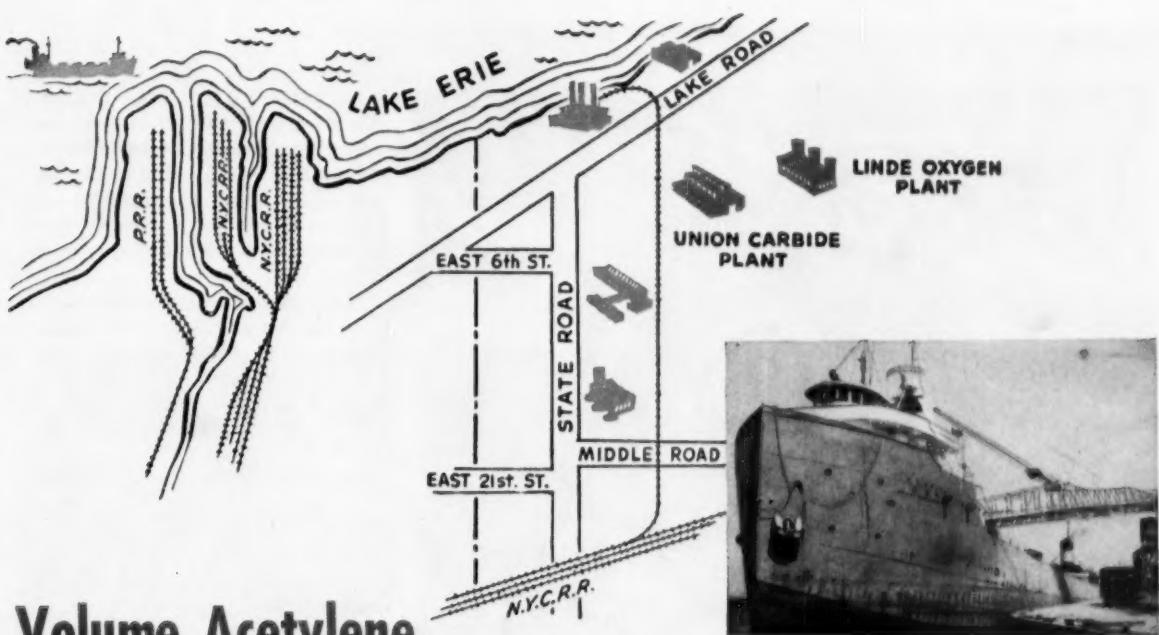
**Payoff for Planning:** This latest fire was by all odds the worst one in Publicker's history. In fact, there's been only one other and that took place over 30 years ago, caused only minor damage. But aware of the hazards in running a chemical plant, the firm has always had a vigorous fire protection program. It has 25 alarm boxes strategically scattered around the plant, gravity feed sprinkler tanks, 9 city fire hydrants and 15

private hydrants, 3 trailer pumps, a crash truck and other modern fire-fighting equipment.

But Publicker is also lavish with its praise for the Philadelphia Fire Dept., which minimized property damage and confined the blaze to the one building. The department holds weekly planning conferences at which hazards inherent in such industries and necessary precautions are constantly on the agenda. During the fire, the city firemen worked in close cooperation with the plant men who escorted them around the area pointing out the nature of the chemicals being handled and the precautions that should be taken when handling them.

For Publicker, the experience has brought home the rewards for planning:

It has found that a workable disaster plan is simple accident insurance: you hope it will never be needed, but you can't afford to be without it. Moreover, there's never any telling how good it is until disaster strikes. And though Publicker had the bad fortune to have its emergency plan tested, it had the good fortune to find that it worked.



## Volume Acetylene Now Available at ASHTABULA

If you plan to use acetylene as a raw material in your proposed new plant, consider these advantages of the Ashtabula, Ohio, area:

**1. Acetylene by Pipe Line.** Acetylene gas can be generated at the UNION CARBIDE plant in Ashtabula and piped directly to you. In fact, acetylene now can be piped safely and economically for many miles.

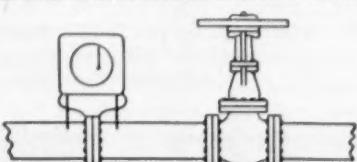
**2. Plant Sites Available.** Choice locations for your new plant are available in or near Ashtabula, and well within piping distance of volume acetylene.

**3. Ashtabula—A New Chemical Center.** Chemicals now produced in the Ashtabula area, in addition to acetylene and calcium carbide, include sodium, chlorine, oxygen, HCl, lime slurry, polyvinyl chloride, and trichlorethylene. Nitrogen is also available in large volumes.

**4. Transportation—Rail or Water.** Ashtabula is served by the New York Central, the Pennsylvania, and the Nickel Plate Railroads. With its location on Lake Erie, your products can be shipped by barge to all parts of the United States reached by inland waterways. Completion of the St. Lawrence Seaway will offer further advantages for bulk shipments.

UNION CARBIDE is also produced at Niagara Falls, New York; Sault Ste. Marie, Michigan; and Portland, Oregon, in addition to Ashtabula. Bulk shipments to chemical users can be made from any of these plants, including Ashtabula. Drum stocks for industrial users are maintained at 111 warehouses throughout the United States.

Whatever your plans or requirements, you are invited to telephone or write to LINDE's CARBIDE-ACETYLENE DEPARTMENT for complete technical information and counsel.



Acetylene • Sold by Meter

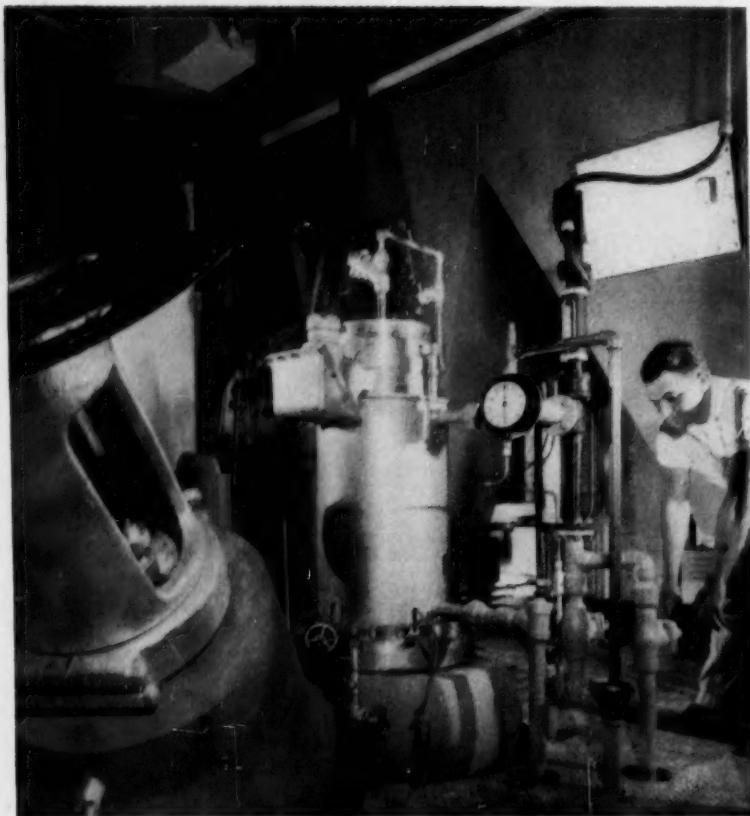
### LINDE AIR PRODUCTS COMPANY

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ATOMIC PARTS PLANT: Process industries are collecting the bonus from . . .

## Motors in a Can

The atomic energy program's rigorous demands on equipment for handling dangerous materials make many of the process industries' earlier problems pale by comparison. But, more important, successful solution of the atomic energy problems often pays off handsomely for the process industry—in new and improved equipment and techniques. That was heavily underscored last fortnight as Westinghouse took the wraps off its Cheswick, Pa., plant, the first privately financed plant built exclusively to make nuclear power components. The Cheswick plant (which takes up only 2 acres of a 113-acre site) represents a \$3-million investment for Westinghouse. It's making "canned" motor pumps and valves used in nuclear power plant systems.

**Started by Subs:** Westinghouse got interested in the canned pumps while designing the atomic-powered *Nutilus*. Basically, the idea came into being because of the need for absolutely leak-

tight service. For despite the advances made in the design of centrifugal pumps, each required a stuffing box to seal the rotating shaft from the stationary casing. And no matter how good the seal, there's always a chance that the packing might permit small leaks.

The solution: put all the moving parts—rotor, shaft, impeller and liquid—in an airtight "can," sealed off from the nonmoving parts. The seemingly simple solution, of course, proved to be a pretty difficult feat. For one thing, the idea was fine, the liquid being moved would act as the lubricant, provided you were pumping oil. If you were handling something else, you were apt to run into real difficulties.

But the problems, though staggering, were not insurmountable. Westinghouse is now turning pumps out in sizes ranging from  $\frac{1}{2}$  hp. (5 gpm.) to 300 hp. (4,000 gpm.).

In addition to the manufacturing facilities, Westinghouse revealed that

it has installed a "test loop" that permits the pumps and valves to be put through their paces. Costing \$400,000, the test loop is believed to be the biggest of its kind, can duplicate any temperature and pressure under which a canned pump might be expected to operate.

Westinghouse is not the only one to make a canned pump, of course. Chempump (Philadelphia), Allis-Chalmers (Milwaukee) and Peerless Pump (Los Angeles) have all had a long-standing interest in them (CW, Jan. 6, '54, p. 64).

Nor has their scope of applicability in straight chemical processing been determined as yet. But with the technological problems ironed out, the equipment is ready and waiting for tougher jobs.

## Shielding the Atom

But while the atomic energy program is aiding the process industries (*see above*), the process industries are doing their best to return the favor. This week, for example, Victor Chemical revealed it had developed a ferrophosphorus as an aggregate for concrete used in protective shielding of atomic hot-cell installations. As Victor sees it, the material will simplify the construction of the cells. Here's why:

Atomic hot-cell installations are simply shielding chambers of approximately room size where radioactive materials are worked or handled by remote control. Because of the need for close supervision of the work going on in the cell, says Victor, the thickness of the shield is important; the thinner the wall, the easier it is to control the operation.

Almost any dense material is a good absorber of radiation. But ordinary concrete (150 lbs./cu. ft.) would necessitate walls 6-8 ft. thick. Low-grade iron ores and other materials (e.g., barites), although better, were still no denser than 200-220 lbs./cu. ft.

On the other hand, scrap steel, shot and steel punchings produced a dense enough material but the mixes segregated and the workability of the mixes was poor. The ferrophosphorus, Victor reports, eliminates both drawbacks, produces a material weighing 290-300 lbs./cu. ft. without adversely affecting the quality of the mix.

...when you buy  
**Neville Chemicals**  
you buy protection



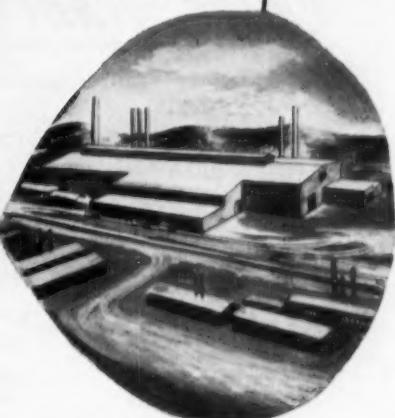
*In the Home*

Mastic floor tile now lasts longer and is made better due to Neville Resins. Common household items, like drain mats and bathroom mats, molded rubber products, even phonograph records, are far more durable, thanks to the use of Neville Resins. And rubber wire insulation, manufactured with these modern resins, protect the home.



*On the farm*

Neville Phenothiazine, used in proprietary medicines, protects cattle against disease. Neville Aromatic Solvents, used in making Insecticides and Herbicides, protect farm crops, and Neville Resins insure citrus preservation. Neville Resins also are used to make aluminum paints for farm buildings and Neville Shingle Stain Oils preserve wood surfaces.



*In Industry*

Coatings made from Neville Resins and Solvents protect valuable equipment, buildings and finished products from corrosion. Adhesives, floor tiles, foundry core oils, insulation compounds and rubber products—all do their job better because of Neville Resins.

- Yes, when you buy Neville Chemicals, you buy protection . . . protection against the elements, against wear and tear, even against cattle and crop diseases . . . protection that comes from years of experience and research in this field.

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| <input type="checkbox"/> MONOHYDRATED<br>COPPER SULFATE      | <input type="checkbox"/> MANGANESE<br>CARBONATE                         |
| <input type="checkbox"/> COPPER CARBONATE                    | <input type="checkbox"/> FERRIC SULFATE                                 |
| <input type="checkbox"/> COPPER HYDRATE                      | <input type="checkbox"/> SULFUR DIOXIDE                                 |
| <input type="checkbox"/> CUPRIC CHLORIDE                     | <input type="checkbox"/> MONOHYDRATED<br>ZINC SULFATE                   |
| <input type="checkbox"/> CUPRIC OXIDE                        | <input type="checkbox"/> CHLOROSULFONIC<br>ACID                         |
| <input type="checkbox"/> MANGANESE<br>SULFATE                | <input type="checkbox"/> ORGANIC<br>SULFONIC ACIDS<br>(AND DERIVATIVES) |
| <input type="checkbox"/> MONOHYDRATE<br>MANGANESE<br>SULFATE |   |

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PRODUCTION . . . . .

### EQUIPMENT

**Acrylics for Work:** Orlon acrylic T shirts, fitted work gloves, as well as caps, jackets, trousers and shirts are the latest offering of Worklon, Inc. (New York City). The fiber's resistance to corrosion and ease of laundering should make them a natural for use around the plant, the firm feels.

**Static Check:** Researchers of the Dayton Rubber Co., after turning their attention to the old problem of detecting the static electricity around V-belts, have arrived at a simple recommendation: hold a 1/25th watt neon glow bulb near the V-belt. If it lights up, there may be enough electricity present to cause trouble. On a good, dry day, they point out, there may be enough present to knock the bulb right out of your hand.

**Silicon Diodes:** Texas Instruments Inc. (Dallas) has just introduced four new types of silicon diodes for use as constant voltage references. This makes 19 standard silicon diodes the firm has in quantity production. They're important steps in electronic circuit miniaturization, the maker claims, because the silicon assures sharp breakdown and high temperature operation.

**Solenoid Pump:** Hills-McCanna Co. (Chicago) is bringing out a new positive displacement pump for metering a flow. Tagged the UMC pump, it's actuated by a solenoid-operated, single-revolution clutch. Thus, one stroke of the plunger responds to an electric signal that can be timed to feed to the main line at regular intervals. Electrical impulses can originate from a flow meter, differential meter, gravimetric meter or program timer.

**Turbine First:** The Gates Rubber Co. (Denver, Colo.) will be the first user of a gas turbine in the rubber industry, reports General Electric, who will build and install it. The turbine is rated at 5,000 kw., will be placed in operation by the spring of next year. Employing natural gas as fuel, it will generate electricity and the exhaust gas will be put to work in a waste-heat boiler to produce steam for process use in the plant. Should the natural gas supply be interrupted, the unit

*"You call this a 'rat trap'?"*



Strange name maybe. But that's what packaging men have labeled this ingenious corrugated pad. The name doesn't mean anything...it's just that the pad looked like the originator's idea of a rat trap. The pad fits snugly inside an H&D shipper, braces corners and suspends the product.

Of course, that's just one of the tricks up H&D's experienced sleeve...all designed to give your product the most protection at the least expense. Mind if we show you how?

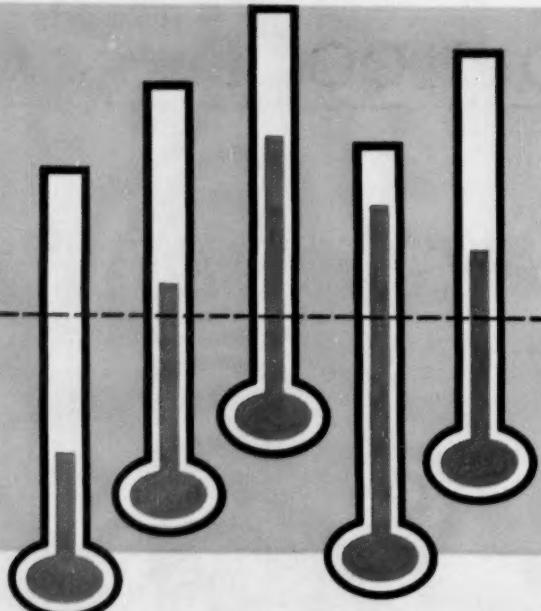


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New York Office, 10 Rockefeller Plaza, New York, N. Y., Phone Circle 7-2320

## PRODUCTION . . .

will change over to distillate fuel automatically.

**Graphite Heat Exchanger:** Carbone Corp. (Boonton, N.J.) is now out with a new graphite heat exchanger, which it's calling Polybloc. The firm claims it has an edge over other graphite heat exchangers because orientation of the graphite crystals gives it higher thermal conductivity and because design causes continual turbulence, minimizes the need for scale or film removal.

**AC Motors:** Bogue Electric Mfg. Co. (Paterson, N.J.), has obtained a license to a European-developed variable speed ac. motor. It is now producing them. Basic idea for the motor originated in Europe before the war, but Laurence, Scott & Electromotors, Ltd. (England) was the firm that refined them and the one under whose license Bogue is operating. They're designed to operate on three-phase electric power of 50, 60 or 400 cycles, are being groomed for a host of process industry jobs.

**Instrument Class:** The Instrument Society will present its 1955 Maintenance Clinic in Los Angeles in three days starting Sept. 10. All told, the session will handle 24 subjects; each student will have his choice of one of the three groups of eight subjects. Classes will be aimed at men charged with the responsibility of maintaining industrial process and test control equipment, will cover principles of operation, demonstrations, and will also feature methods of detecting and improving improper operation.

**Low-Pressure Gauge:** Kontes Glass Co. (Vineland, N.J.) is now making a Bennert Manometer for measuring absolute pressures in the 0 to 240 mm. range.

**Easy Speaking:** It's intended for safety men, but the National Safety Council feels that its new "Pocket Book of Speech Formulas" will help anyone called on to give a speech. It explains how to practice a speech, how to use your voice, how to hold your audience and how to make the speech teach. It's available from the National Safety Council for 60¢ for NSC members, \$1.20 for nonmembers.

# CHEMICALS OUTLOOK

August, 1955



## PLURONICS IMPROVE LEVELING OF DYES FOR WOOL, COTTON, AND SYNTHETICS

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

Wyandotte Pluronics\* -- a new series of 100%-active nonionic surface-active agents of unique chemical structure and high molecular weight -- offer the textile industry many advantages as scouring aids and as dyeing assistants in dye leveling.

Properties of the Pluronics, responsible for their commercial acceptance as dye assistants, include: stability to acids and alkalies over the entire pH range; compatibility with metal ions; excellent dispersing of dyes, pigments, lime soaps, and soils; good penetration; extremely low to moderate foaming properties; and their availability in liquid, paste, or flake forms, all 100% active. The dispersing properties of the Pluronics, combined with their stability throughout the entire pH range, makes them particularly useful in acid baths.

In the dyeing of wool, it has been found that Pluronic F68 effectively disperses, suspends, and aids the penetration of both acid and chrome dyes -- helping to produce colors that are brilliant, clear, and level. It is also an effective solubilizing agent for many dyes which are normally difficult to put into solution.

Improved leveling of both direct and vat dyes can be achieved with Pluronic F68 in the dyeing of cotton. F68 is also useful as a dispersing agent for diazo salts which form diazonium dyes directly on the fabric . . . and as a dye assistant for synthetic and synthetic-wool mixtures, spun nylon, and acetate rayon.

F68 is the Pluronic grade which has been most generally used in these applications. It has no cloud point.

Pluronic L61 has virtually no foam in most systems. The L61 grade has been successfully employed as a foam suppressant, vastly reducing the foam of soaps and other nonionic detergents and wetting agents. A new data sheet on the use of Pluronics in dye leveling is now available.

We are now in commercial production of a new Pluronic grade which combines the excellent dispersing and suspending properties of Pluronic F68, and the extremely low-foaming property of grade L61.

A free-flowing flake material, it is called Pluronic F68 LF, and should be of particular help to makers of many boiler-treating compounds and to all compounders of low-foaming detergents.

Samples are available now.

\*REG. U.S. PAT. OFF.



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# RESEARCH . . .



SHAWINIGAN'S CROZIER: Expansion, exploration signify his company's . . .

## New Role in Resins

Last week, as researchers of Shawinigan Resins were getting acquainted with their new surroundings in Springfield, Mass., it was becoming clear that research would largely determine the success of the company's new role in the resin business.

No longer selling its wares through

Shawinigan Products and Monsanto (each of which owns a half-interest in the company), Shawinigan Resins finds itself in the unfamiliar position of having to worry about end uses of its products.

That, plus other considerations (e.g., growth), is behind the moving\*

of the company's research staff from Milltown, N. J., to Springfield. Now situated at the plant, Shawinigan Resins' research is gearing to its new responsibilities. And that means preparing for a great deal more applications research.

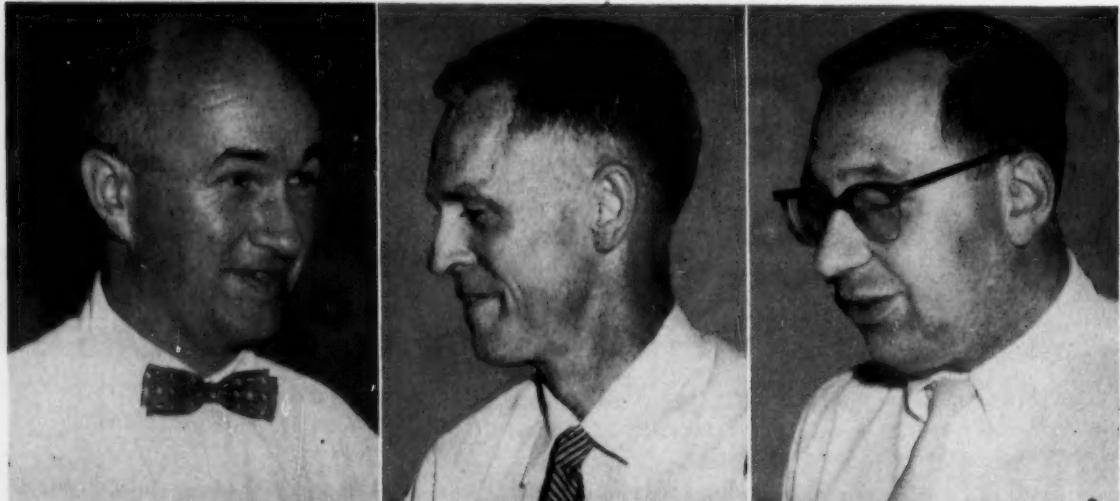
Whatever applications research the firm had previously done was an integral part of process and product development. The primary worry at Milltown was to develop basic resins and processes for turning them out; developing uses for these materials was a job for Monsanto, Shawinigan Products and firms in the consuming industries.

From now on, however, the parent companies will do only as much applications work as is required in their capacity as consumers of Shawinigan resins. The latter is setting up distinct applications research groups to deal with its product line: polyvinyl acetate, polyvinyl formal, several polyvinyl butyrals, polyvinyl acetate copolymers and emulsions.

These materials are used in diverse ways:

The polyvinyl formal is used in wire enamels, adhesives and surface coatings. The butyrals make adhesives, safety-glass components, wash primers, adhesive surface coatings, etc. Poly-

\* To accomplish the move Shawinigan Resins had to buy the Milltown laboratories from Shawinigan Products. These facilities—a one-story lab-office building, garage, extra building at rear—and several acres of land are now for sale.



WEYMOUTH, PRICE, TERRY: Their new worry—end uses.



# Here's the utility can farmers prefer

A good way to build a bigger volume in the farm market among sportsmen, home gardeners, contractors, etc., is to deliver your product in a utility can that they like to use—and can easily re-use!

Tri-Sure\* Nozzles, Spouts, Caps and Inner Seals on utility cans have the features that users want—easy pouring and filling.

The Tri-Sure filling Nozzle, with large  $2\frac{1}{8}$ " opening, gives a big advantage—makes the can easy to center and easy to fill without flashback. This opening also acts as a vent in pouring. Tri-Sure Hex Caps and Inner Seals can be lithographed and embossed with your private design for product identification.

Give your product the competitive advantage of the utility can equipped with the best closures. Ask your supplier now for Utility Cans with *Tri-Sure Nozzles and Spouts and Inner Seals*.

Write for information on the complete line of Tri-Sure Products—Nozzles, Spouts, Seals, Screw Caps and Assemblies for Pails and Cans, and Tri-Sure Closures for Drums.

\*The Tri-Sure Trademark is a mark of reliability backed by over 30 years serving industry.

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## 2 SIZES FOR POURING

Double Hex Cap extends spout and makes it easy to get to inaccessible openings.



## EASY TO POUR

Spouts available in standard 2" and long 2 1/8" sizes. Rigidity of the closure makes it easy to rest spout on filling opening. When container is full, stream pours clear of chime.



## EASY TO RE-USE

Large opening makes can easy to clean out and re-fill.



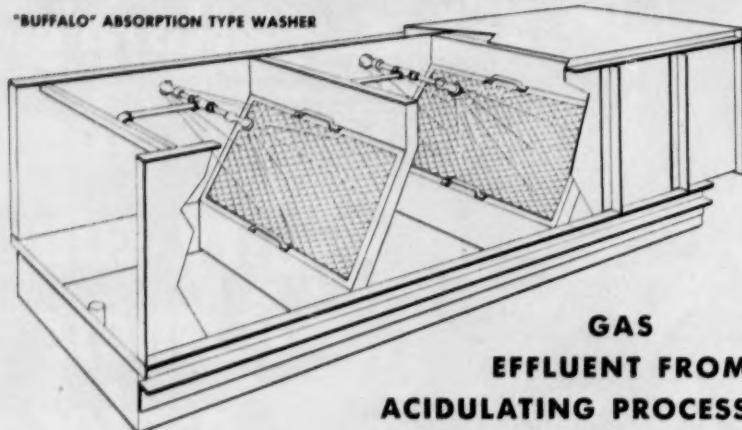
## PROTECTION

Closures are above pail head chime eliminating water seepage. Heavy-weight Nozzles and Spouts are gasketed in the clinching rim for complete protection.



# AIR CLEANING in the PROCESS INDUSTRIES

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MADE NUISANCE-FREE**

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**"Buffalo"**

## PROBLEM

The gases from an acidulating process had created such a disagreeable odor nuisance for blocks around the plant, that it became necessary to take imme-

diate abatement steps. The exhaust contained high concentrations of glacial acetic acid and acetic anhydride.

## SOLUTION

High concentrations, plus a desire to recirculate a neutralizing absorption liquor, called for a special "Buffalo" Absorption Type Washer. It contained two stages of wetted glass fibers for absorption of the acid vapors and a final dry glass fiber filter to prevent

droplet carryover. Requirements for corrosion resistant materials of construction were considerably lowered by the use of neutralizing scrubbing liquids. Low initial cost, low pressure drop and flexibility of operation made this unit an ideal choice.

## RESULTS

The gas was rendered completely nuisance-free and the installation earned the blessings of both authorities and neighbors. In fact, observers and work-

men could actually stand in the effluent gases with no ill effects. Maintenance has proved to be simple and economical.

## SEND US YOUR PROBLEMS!

Above is just one of hundreds of specialized problems solved for every industry by "Buffalo" equipment and engineering knowledge.

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EXHAUSTING COOLING  
FORCED DRAFT  
PRESSURE BLOWING



## RESEARCH . . . . .

vinyl acetate emulsions find use in adhesives, paints, non-re-emulsifiable films, etc. And a polyvinyl acetate copolymer, soluble in bases, is useful in textile treating and other applications requiring water solutions of the resin.

It's the hope of Robert Crozier, Shawinigan Resins' research director, to build groups to conduct studies for specific industries in which the company's products are used or are potentially useful.

But existing products are by no means expected to monopolize the research effort. The company will, avers Crozier, be alert to chances of developing new resins, new forms, new formulations. One important result of the reshuffle, he points out, is that it allows his researchers more freedom to conduct work of an exploratory nature.

One area that is certain to undergo more study is polyvinyl acetate copolymers. Shawinigan is pilot-planting several new ones, has already begun distributing samples.

And a new polyvinyl alcohol plant (*CW Newsletter*, July 23) also fits in with the desire to get into new resins, where favorable opportunity presents itself. The planned multimillion-lbs./year plant (at Springfield) reportedly will produce a wide range of polyvinyl alcohols varying in molecular weight, degree of hydrolysis and acetate content. Samples of Shawinigan Resins' polyvinyl alcohol are said to have enjoyed a good reception by users.

Polyvinyl alcohol is currently produced by Du Pont, Colton, American Polymer, American Aniline and Dewey and Almy.

To put fiber into its ambitious plans, Shawinigan Resins is building an addition to its laboratory building that will double the working space† for research. Pilot-plant facilities have already been doubled.

By the end of this year, moreover, the company hopes to have 45 researchers on the payroll. That's almost double the number of staffers employed at the close of last year. Size of the research staff is now 38. Group leaders Edward Lavin, Aubrey Price, Harold Weymouth and Herbert Terry

† Overflow Shawinigan researchers are now working next door in laboratories of Monsanto's Springfield plant. Shawinigan rents this space from Monsanto.



# PHOSPHORUS TRIBROMIDE

## may be an intermediate you're looking for

Phosphorus Tribromide has long been established as a valuable intermediate primarily through its outstanding characteristics as a bromine donor. However, its great potential for other uses has hardly been tapped. Investigation of this potential will prove profitable to many. Are you included? Check the applications noted; you may discover you wish to further examine Phosphorus Tribromide.

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## RESEARCH . . . . .

are the backbone of the beefed-up staff.

By taking on the sale of its products, the firm also takes on many burdens it never before had—or had to a much lesser extent. This will be especially true in research, which will

be called upon to back the sales effort, come into close contact with customers.

This task may carry its share of headaches; but it also opens a valuable dimension to researchers in quest of new products and new customers.



UPJOHN'S SCHREIBER: In sterile drugs, a clean sweep for radiation.

### Jolt for Germs

As a bactericide for drugs, radiation has been much researched,\* but hitherto unexploited. This week, however, drug makers watched radiation sterilization take its commercial bow, hastened to compare its pros and cons with those of other manufacturing techniques now used to free pharmaceuticals of possibly dangerous germs. The occasion: unveiling at the Upjohn Co. (Kalamazoo) of a production-line radiation sterilizer, capping five years of study by the firm.

Upjohn's research, as well as its production setup, centers around a Van de Graaff electron accelerator purchased five years ago (for \$80,000) from the High Voltage Engineering Corp. (Cambridge, Mass.). The device (see box, p. 70) emits electrons in a pencil-size beam, which scans back and forth over traveling trays of packaged drugs.

\* Radiation's bactericidal properties have been known for over half a century, have been researched most intensely in the past decade coincident with the availability of large radiation sources.

Alone, and in collaboration with the U.S. Food & Drug Administration, Massachusetts Institute of Technology, University of Michigan, and others, Upjohn researchers have probed the precise radiation dosages required to kill bacteria with no adverse effect (residual radioactivity, chemical change) on a wide variety of drugs.

Right now, Upjohn is irradiating only two of its products commercially—both of them eye ointments (Escap Neo-Cortef, which combines neomycin and hydrocortisone, and Escap Myciguent, containing neomycin)—which are being distributed regionally, won't be available nationally for several months. And the firm says it has no plans to extend its radiation-sterilized line at this time.

But, according to Richard Schreiber, the firm's vice-president and director of research, there is no reason it couldn't if the move proves economically feasible. Schreiber avers his researchers have compiled sterilization data on a wide range of antibiotics—

on ACTH, cortisone, multivitamin preparations, heparin (an anticoagulant), proteins, alkaloids, and sulfonamides. Upjohn's radiation-sterilized penicillin G already has FDA approval.

Cost of the project so far: an estimated \$0.25-0.5 million. In the long run, radiation will probably be used only on products where conventional sterilization methods are too difficult or time-consuming. Schreiber sees radiation as an adjunct rather than a replacement for these principle techniques—which include heat, chemical additives, and aseptic filtration.

Each of these, however, also has its limitations. Radiation will probably have an edge in the treatment of heat-sensitive compounds, where residual chemical contaminants must be avoided, and where removal of bacteria by filtration requires unduly elaborate equipment and operations.

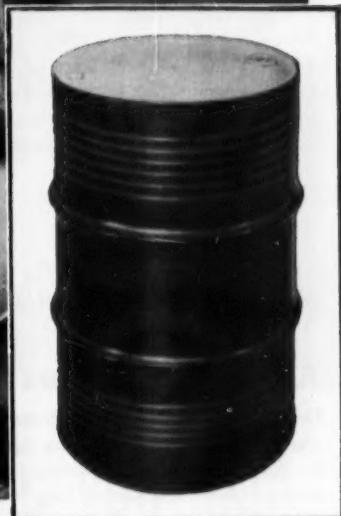
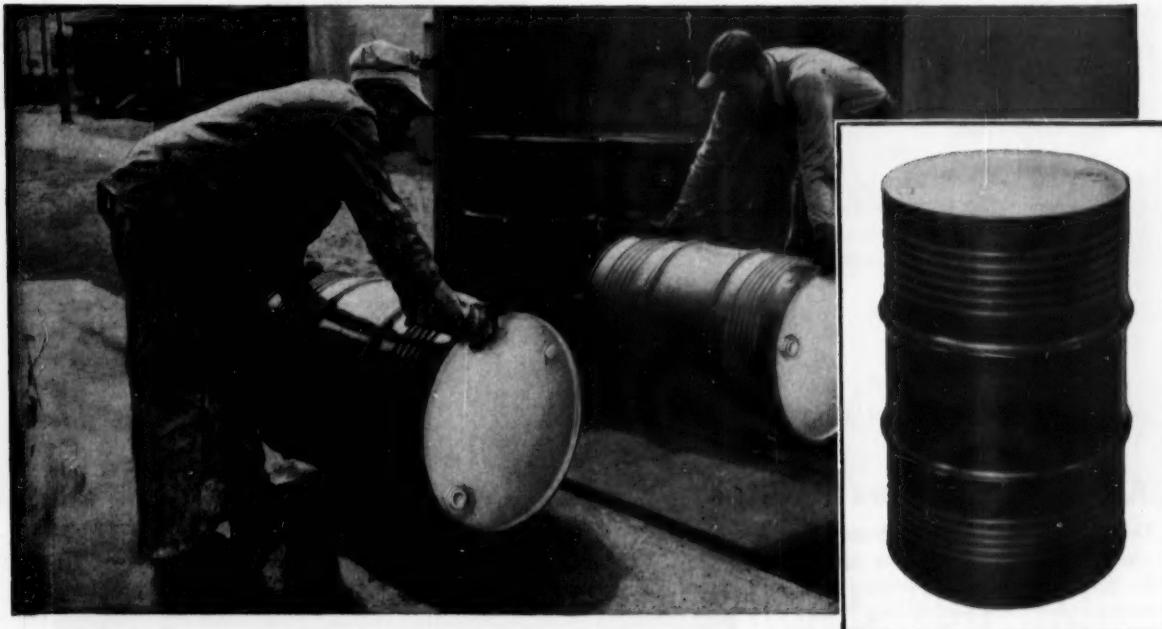
Outstanding attributes of radiation: speed (all living organisms are killed in a fraction of a second); thoroughness (other methods often leave at least some—the permissible maximum—of bacteria); absence of effect on either the potency or the safety of the drug. In addition, the drugs can be sterilized after packaging, eliminating the possibility of recontamination during processing, which condition exists with other methods.

The electron beam kills bacteria quickest at low temperatures, induces only a slight temperature rise in the product being sterilized. High temperatures, the presence of protein, salts, and certain pH levels hinder its bactericidal effectiveness.

Main advantage of electron accelerating machines as opposed to other radiation sources, such as cobalt-60, are speed, power and safety. Upjohn project leader George Colovos points out that the Van de Graaff can accomplish in seconds the hours-long effect of cobalt-60 and, more important, the generator can be turned off. But even Upjohn's 2-million-volt generator lacks cobalt-60's penetrating power, cannot kill bacteria beyond about 0.5 in. beneath the surface.

Even if other radiation sources, such as fission waste, become available, accelerators are likely to continue to be important in sterilization duties. Price of the 2-million-volt Van de Graaff, has dropped to \$60,000 since Upjohn's initial investment. High voltage is now making a 3-million-volt model (about

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## RESEARCH . . .

\$125,000) and plans a 10-million-volt version (probable cost, \$250,000) that will permit deeper, more efficient radiation.

Another major radiation machine producer, General Electric Co., now offers 1- and 2-million-volt resonant electron transformers, reportedly has a 4-million-volt model under development at its X-ray division (Milwaukee).

Both these firms are eyeing the future for machine radiation of foods (subject of a \$1-million/year Army Quartermaster Corps investigation), feel this application may provide the largest outlet for their germ-controlling wares.

But regardless of the outcome of such research, odds are that Upjohn's venture into sterilization by radiation will stimulate interest in the field, probably spur other firms into tapping radiation's potential.

### Aldosterone Encore

Drug circles were still abuzz this week over therapeutic vistas opened by the total synthesis of racemic aldosterone (*CW Newsletter*, July 30) by Ciba Ltd.'s (Basle, Switzerland) Albert Wettstein and J. Schmidlin. The reason: while pharmacological and clinical studies have already left no doubt of the hormone's medical significance, such work has been hampered by the compound's scarcity. Complicated fractionation methods yield at best 50 milligrams of aldosterone from a ton of animal adrenals.

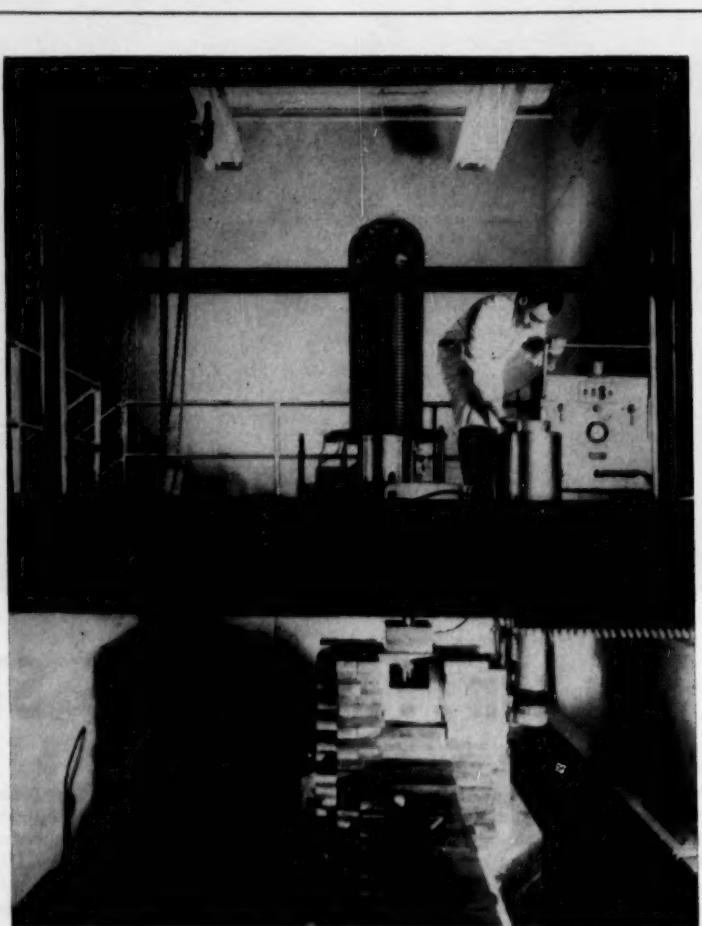
Key to the drug's promise is its high potency—highest of any compound known for regulating the body's mineral utilization and water balance. Even minute amounts (0.1-0.2 mg. daily) will maintain life in victims of adrenal ailments (e.g., Addison's disease) without side effects such as raised blood pressure. And aldosterone's physiological activity extends to affecting carbohydrate and nitrogen assimilation and regulation of white blood cells.

According to Ciba's Robert Gaunt, currently probing the hormone at the firm's pharmaceutical laboratories in Summit, N.J., aldosterone's outstanding effect is to prevent loss of salt through the kidneys, sweat glands, and saliva. Aldosterone is also showing some but not all the actions of cortisone. One big exception: unlike corti-

tisone, aldosterone secretion is not regulated by the pituitary hormone ACTH.

Revealed at the 14th International Congress of Pure and Applied Chemistry at Zurich, Switzerland, the syn-

thesis find came as unheralded (details were completed only a few days before the disclosure) but highly welcome news to the medical fraternity. Although the synthesis is reported to require 30 chemical steps, Ciba has



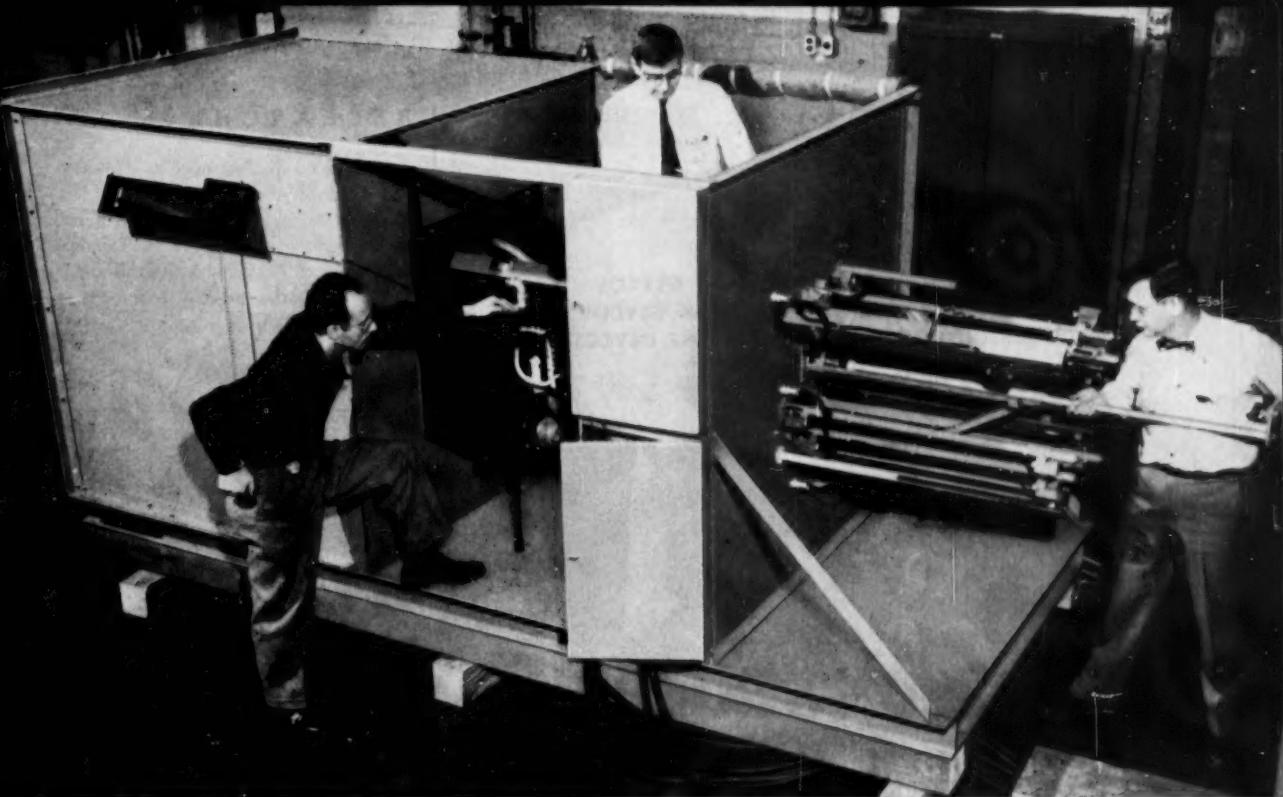
### Assembly Line Anatomy

BURIED IN A LABORATORY basement, Upjohn's new production arrangement for radiation sterilization comprises an accelerator (*above*) and a moving belt that brings trays of drugs under a scanning beam of electrons, which is shielded by 16 in. of steel bricks. Operators stand behind a thick concrete wall, observe production through mirrors.

Heart of the process, the Van de Graaff accelerator (named for its inventor, a Massachusetts Institute

of Technology professor), involves the discharge of high-voltage electricity on a fast-moving belt, delivery of electrons to an acceleration tube where they build up momentum through 50,000-volt kicks from each of 43 rings around the tube.

This concentrated stream of electrons is fired through a thin aluminum window at the drugs to be irradiated. Helpless bacteria are hit by electron bullets traveling 175,000 miles/second.



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## RESEARCH . . . . .

displayed no qualms over its commercial feasibility.

Scientists at Basle University, Ciba, and Middlesex Hospital in London isolated and analyzed aldosterone (it differs from other adrenal hormones in containing an aldehyde group), paved the way to synthesis.



### Energy Prober

PURIFICATION of firefly-derived luciferin is one facet of energy studies by William McElroy at Johns Hopkins University (Baltimore). Combined with energy-source adenosine triphosphate (ATP), luciferase (an enzyme also derived from the insects), and magnesium sulfate, luciferin emits a glow varying in intensity with the concentration of the ATP.

The phenomenon, measured photoelectrically, provides an accurate gauge for measuring the amount of ATP in plant, animal, or human tissue, recently helped ascertain the effect of mental drug chlorpromazine [3-chloro-10-( $\gamma$ -dimethylaminopropyl)-2-phenothiazine hydrochloride] on ATP in the central nervous systems of rats.

To assist the project, the university pays 25¢/100 fireflies (delivered live), offers Baltimore youngsters a \$10 prize for the most fireflies caught during the season.

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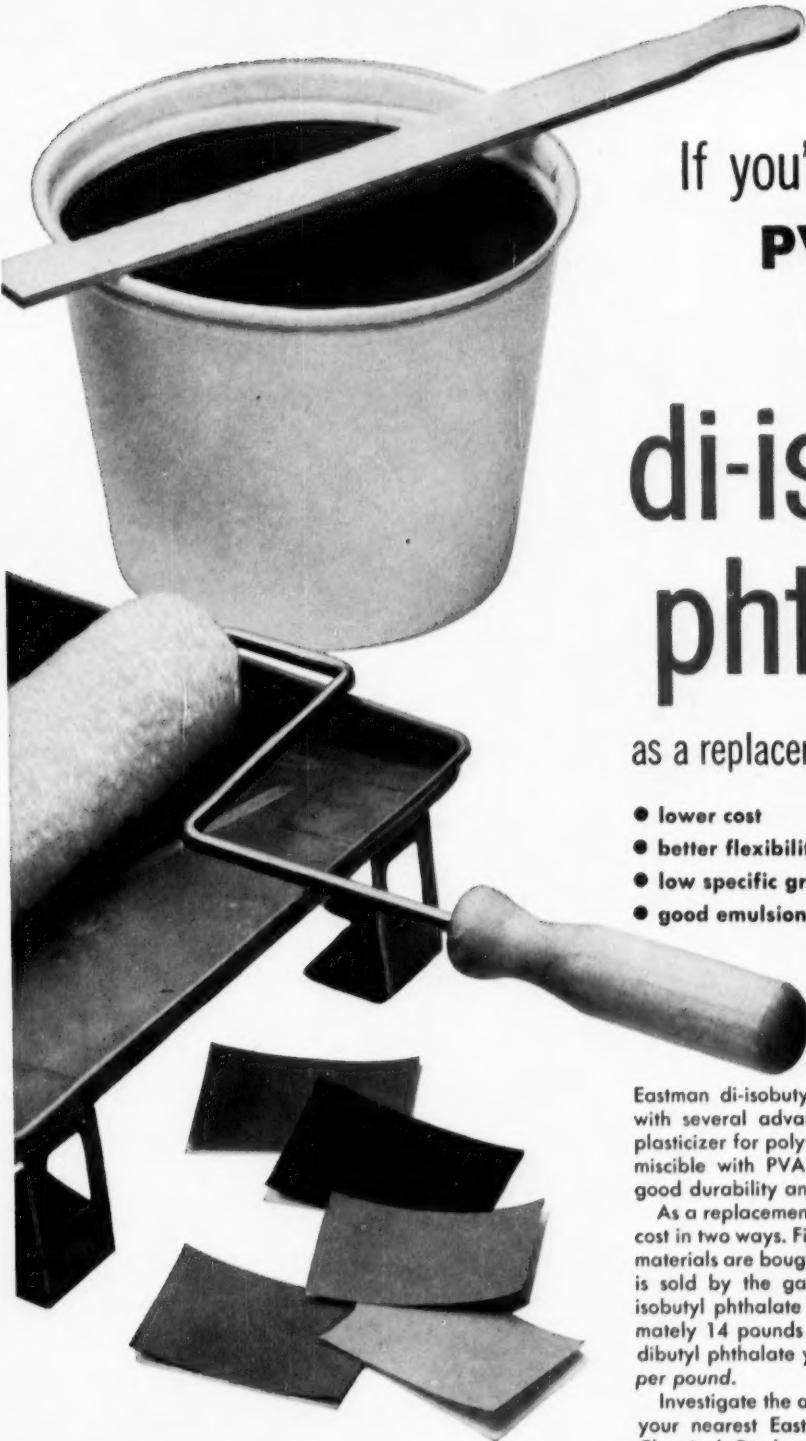
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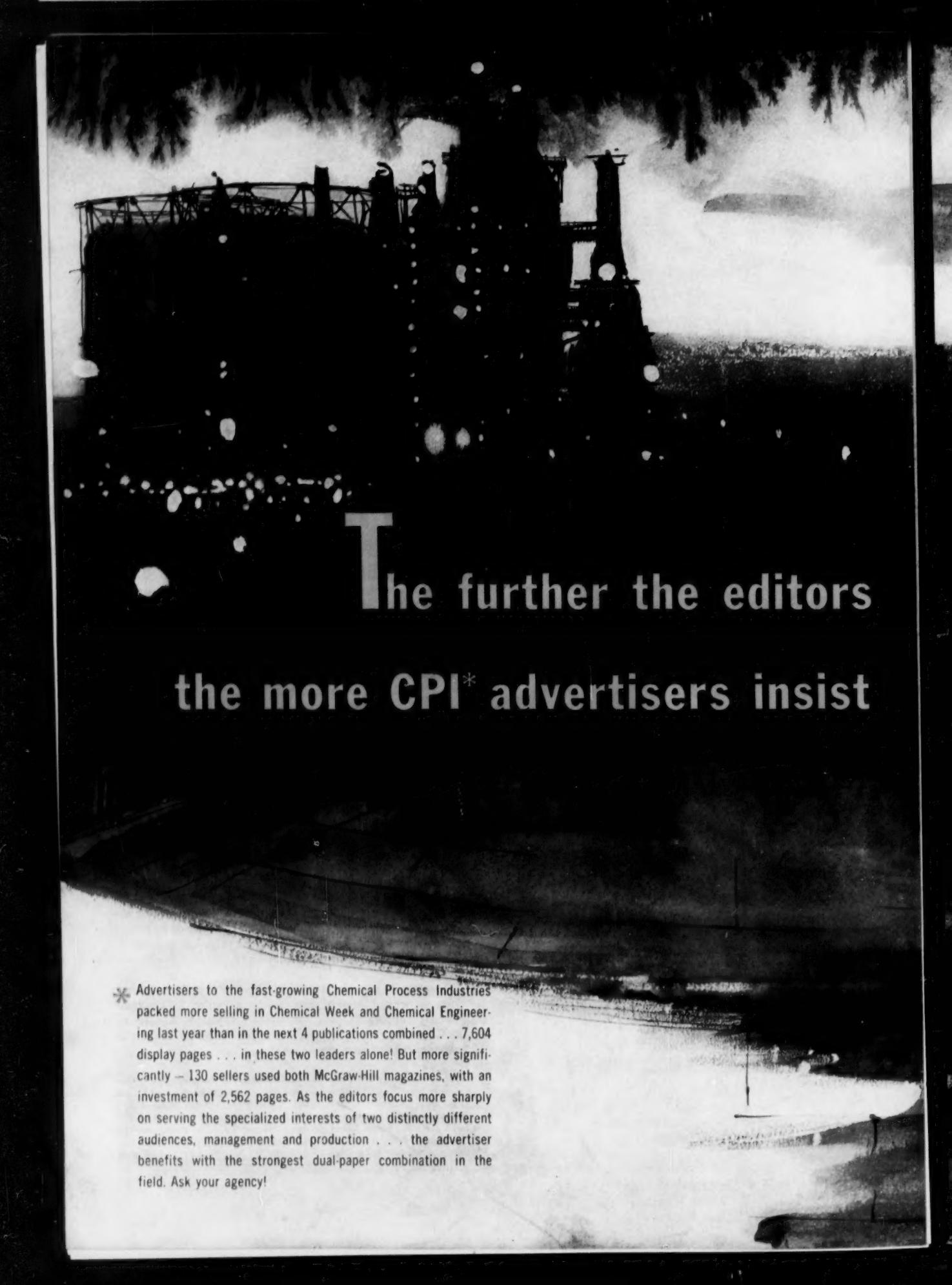
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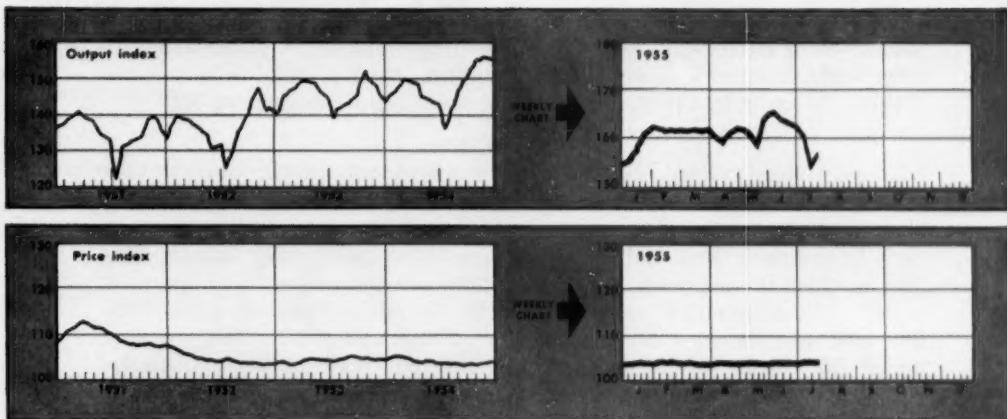
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# MARKETS . . . . .



## WEEKLY BUSINESS INDICATORS

CHEMICAL WEEK Output Index (1947-49=100)

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947-49=100)	158.0	157.2	137.7
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.3	104.3	104.2
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	467.9	459.3	266.3

CHEMICAL WEEK Wholesale Price Index (1947=100)

Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)

## MONTHLY INDICATORS—Foreign Trade (Million Dollars)

	Latest Month	Exports Preceding Month	Year Ago	Latest Month	Imports Preceding Month	Year Ago
Chemicals, total	\$89.2	\$99.3	\$86.6	\$23.6	\$22.4	\$22.6
Coal-tar products	5.6	6.0	6.3	4.1	3.5	2.6
Industrial chemicals	13.1	13.1	14.4	6.7	5.7	4.3

## MARKET LETTER

Vitamins are in the news again this week, and for the usual reason—a cut in prices. Previously, riboflavin and thiamine chloride underwent some drastic slashings, but the latest affects synthetic vitamin A.

Nicked by sharp competition from natural, synthetic tags now read: in crystalline form, 500,000 units/gram, in kilo lots, \$67.50/kilo (down \$5); solution of Vitamin A palmitate in corn oil and the acetate or palmitate in cottonseed oil, 10¢/million units—a 2¢/million-units cut.

Perhaps of wider significance are this week's lower urea prices. That reductions would be coming was clearly indicated by the flood of new urea slated to hit the market this year (*CW*, July 23, p. 77). Few, though, expected to see changes posted so soon.

Du Pont led with \$15/ton reductions on its agricultural and feed formulations, set c. l. levels at \$105/ton delivered in Zone 1. Other companies (e.g., Grace, Allied) followed with comparable prices.

No changes, however, are reported on industrial-grade urea.

In multimillion-pound leaps—that's the way U.S. polyethylene capacity is being altered upward this year. Latest to join the profusion of present—and potential—polyethylene producers, is Dow Chemical's unit at Freeport, Tex. Work in completing the plant is just about wound up. (The first carload of granules was shipped a couple of weeks ago.)

Capacity, somewhere in the 32-35-million-lbs./year range (a rate

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## MARKET LETTER

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not expected to be reached before the end of the year), when added to that of other onstreaming facilities, including Monsanto's, National Petro-Chemical's, Spencer's, Bakelite's, etc., will hike the U.S. total by a near-250 million lbs/year by the end of '55—and there's more coming in '56.

Going up, too, is this country's synthetic rubber output. Late last week Goodrich-Gulf Chemical's President William Burt pointed out that production here of the man-made rubber reached its highest peace-time level during May and June. Those months, incidentally, are the first two in which the synthetic plants have been privately owned and operated.

Breakdown of the turnout in the two-month period: about 160,000 long tons, most (130,000 tons) of which was GR-S. This amount, added Burt, was reached despite the fact that the 122,000-ton-capacity Institute, W. Va., plant is not operating. Only time the 160,000 figure was topped: April-June 1953, when all plants, including Institute, were going full blast.

Halt! cried General Services Administration in Washington last week. Reined was the government's program for purchasing columbium-tantalum. Reason: the 15-million-lb. goal established in '52 will be exceeded if all outstanding orders are filled.

Job now is to cut back on undelivered orders on an across-the-board percentage basis. Suppliers will be notified of the extent of reduction by GSA purchasing agents.

Out of Washington, too, comes word that the government has let loose of more scarce tung oil. Some 20 cars were sold last week to high bidders. One immediate result: prices (in N. Y.) edged up another  $\frac{1}{2}\text{¢}/\text{lb}$ .

The new  $27\frac{1}{2}\text{¢}$  price, though, apparently isn't high enough for some sellers in the marketplace; would-be buyers' bids are reportedly being cold-shouldered.

Consumers of ammonium sulfate, who have been offered the material at a \$3/ton saving during the past two months, will pay \$1/ton more during August and September.

The decreasing discounts (off a \$42 base price), are part of coke-oven ammonium sulfate producers' attempts to spread purchases over more months of the year. Note: shipments in October and November will move up to \$41 (f.o.b. plant).

**SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending August 1, 1955**

**UP**

	Change	New Price		Change	New Price
Stannic oxide, dms., divd., E. ....	\$.005	\$1.00	Tung oil, tanks, N.Y. ....	\$.0125	\$.275

**DOWN**

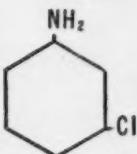
Sodium stannate, dms., works, frt. alld., E. ....	\$.005	\$.566	Urea, agricultural, bgs., c.l., divd., Zone 1, ton ....	\$15.00	\$105.00
Stannic chloride, anhyd., dms., works	.004	.781	Vitamin A acetate, dry, 500,000 units/ gm., kilo lots, kilo ....	5.00	67.50
Stannous chloride, anhyd., dms., works	.006	.842			

All prices per pound unless quantity is stated.

**m-Chloroaniline\***

A water-white to light-amber liquid that tends to darken on storage. It is available in a stabilized form to retard color development. # The sum of the ortho and para isomers is under 2%.

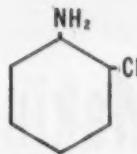
# m-Chloroaniline S Technical

**SPECIFICATIONS:**

Purity: 98.0% minimum  
Freezing Point:—  
11°C. minimum  
Moisture Content:  
0.5% maximum  
Molecular Weight: 127.6

**o-Chloroaniline\***

A water-white solid which darkens on storage. It may contain up to 3% isomers, chiefly para.

**SPECIFICATIONS:**

Purity: 99.5% minimum,  
by nitrite absorption  
o-Chloroaniline Content:  
97% minimum  
Moisture Content: 0.2%

**p-Chloroaniline\***

A water-white to light-amber solid that tends to darken on storage. It is available in a stabilized form to retard color development. # Both forms may contain from 0.5 to 1.0% each of ortho and meta isomers and traces of aniline. p-Chloroaniline is soluble in alcohol and acetone, very slightly soluble in water.

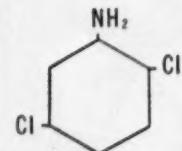
# p-Chloroaniline S Technical

**SPECIFICATIONS:**

Purity: 97.5% minimum  
Moisture Content:  
0.15% maximum

**2,5-Dichloroaniline\***

A white to dull-red-brown solid. Soluble in organic solvents and dilute hydrochloric acid. Slightly soluble in water. It may contain up to 1.0% m-chloroaniline and traces of 2,5-dichloronitrobenzene as impurities.

**SPECIFICATIONS:**

Purity: 99.0% minimum,  
by nitrite absorption.

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\* Sold in technical grades



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**ORGANIC****CHEMICALS DEPARTMENT**

# Making pure Ethylene from Raw Gas

.....

Here, silhouetted against the sky, are giant distillation and absorber towers in the new Canadian Industries Limited Plant at Edmonton, Alberta. Since late last year this plant has been producing highest purity ethylene from natural gas for use in the manufacture of polyethylene.

These operations involve the recovery of ethane from dry gas by absorption at elevated pressure in a "sponge oil." This "sponge oil" is then stripped of its ethane content which in turn is "cracked." The resulting ethylene is then compressed, dried, separated and purified by fractional distillation at 500 p.s.i., and stored under pressure as a liquid.

Graver fabricated four of these towers to ASME standards for this installation. It was extremely important that such equipment be precision made to eliminate the dangers of leakage and distortion.

However, Graver is accustomed to fabricating to the highest standards. Towers, tanks, pressure vessels of every kind are built by Graver to satisfy the most exacting needs of the leading chemical and petroleum companies. For very highly specialized jobs, call on Graver.

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SIGNS OF THE TIMES: Dramatic outlet for one acrylic-methyl methacrylate.

## Acrylate Outlook: Bigger, Brighter, Rougher

Stepped-up activities of acrylate and methacrylate producers today portend greatly increased competition in a field long dominated by one manufacturer. Despite a general hush-hush attitude, here's how behind-the-scenes hustle and bustle is alerting chemical marketers to the lively acrylics arena:

- Rohm & Haas is vigorously developing new outlets for acrylates and methacrylates.

- Carbide and Carbon plans to move into the big time, will increase acrylate production facilities.

- General Aniline is making ready, with Gafite, to vie for a special corner of the market.

In general, the acrylic picture is in a state of flux. Heretofore-secure markets are losing ground in some areas; new markets are said to be expanding rapidly; technical difficulties plague some; fact and rumor about expanding competition worry established producer and aspirant alike.

To all this, add an industry-wide black-out on all production and consumption statistics, and you have a scene that seems to confuse even the experts.

**Sky-high Target:** Hottest item

under debate is the military need for a new "glazing" material for supersonic jet planes. Crux of the situation is that faster planes (now on the drawing boards) will place demands on plastics that cannot be met by the old stand-by, polymethyl methacrylate (Plexiglas). A new material is needed to solve the threefold problem of notch sensitivity, crazing, and temperature failure, without resort to lamination.

General Aniline is confident that the answer lies in Gafite, a chlorinated methyl acrylate polymer. Research and development have been pushed, with the cooperation of the Air Force, and a semi-works unit is now in operation.

However, other producers won't give General Aniline a clear field without a fight. Rohm & Haas, for one, is working on the problem, but will not say how close it is to a Plexiglas alternative. For another, American Polymer (Borden) says the best solution is through the cross-linking of polymers with materials such as methacrylic anhydride, ethylene glycol dimethacrylate, and di-allyl fumarate.

\* Trade term for windows, canopies, turrets.

With the temptation of a market now in the \$20-million/year range, plus the pressure of defense needs, it's safe to assume that a jet-propelled competition is in progress.

**Plastic Pre-empting:** Meanwhile, the plastic part of the acrylic picture has been changing in other ways. For example, up to the end of World War II, sheet polymethacrylate was used primarily in aircraft; although this is still a substantial market, the rocketing of postwar commercial developments has dropped military sales to less than 30% of the total.

Largest single outlet now is in outdoor signs (*see cut*)—one of the post-war developments. This use, plus others, such as skylights and lighting fixtures, keeps the plastic sheet part of the acrylic business at the top of the list.

Second-place importance, held by molding powders, is challenged by acrylic emulsions. But right now the enormous requirements of the automotive industry for molded plastics (particularly for lenses in other than headlights), and the use of these materials for name plates on cars, for household appliances, and for a multitude of other items, continues to

## MARKETS . . . . .

prop methacrylate molding powders.

A recent estimate of acrylic plastic growth placed the probable increase at 33%, from 60 million lbs. in 1954 to 80 million lbs. by 1960. Molding powders are expected to rise about 50% in the next five years; cast sheet is probably due for a 10-20% increase in the same period.

Uses of acrylic emulsions, however, are reportedly growing rapidly and the emphasis is on acrylic paints. Statistics are virtually nonexistent, of course, but one paint manufacturer estimates the current consumption of acrylates for this purpose at roughly 2 million lbs./year. Another paint-maker calculates the total latex consumption to be 40-60 million lbs./year, but feels that acrylics account for less than 10% of the total.

Nonetheless, the future of acrylic paint looks good to most observers. One reason: monomer costs are expected to decrease, which in turn could pare the somewhat higher acrylic paint prices.

Other applications of acrylic emulsions are in leather finishing, textile finishing, and paper treatment, in that order of importance.

In leather finishing, methyl-, ethyl-, and butyl-acrylate copolymers are used as base coats to impart permanency, elasticity, and flexibility to final coatings. Synthetic rubber latices are competitive and cheaper, but less odor and greater permanency is claimed for the acrylics.

Acrylics for textile finishing are closely related to those used for leather. Uses in textiles include the imparting of "hand" to the fabric; pigment printing (instead of dyes, pigments are bound to the textile with resins); the preparation of wash-and-wear cottons; sizes for woven goods; and back-sizing of loosely woven fabrics, e.g., upholstery, rugs, carpets.

Fourth in order of importance are oil additives. Polymers of methacrylic acid are used for VI (viscosity index) improvers, polymers of methacrylic acid esters for pour point depressants. Rohm & Haas is now the only major maker of acrylic oil additives.

**Not Many—Yet:** Today, producers of acrylate esters are limited to two—Rohm & Haas offering methyl, ethyl, butyl, and 2-ethylhexyl esters; Carbide and Carbon emphasizing ethyl, butyl, decyl, and 2-ethylhexyl acry-



### New Markets in Odd Tires

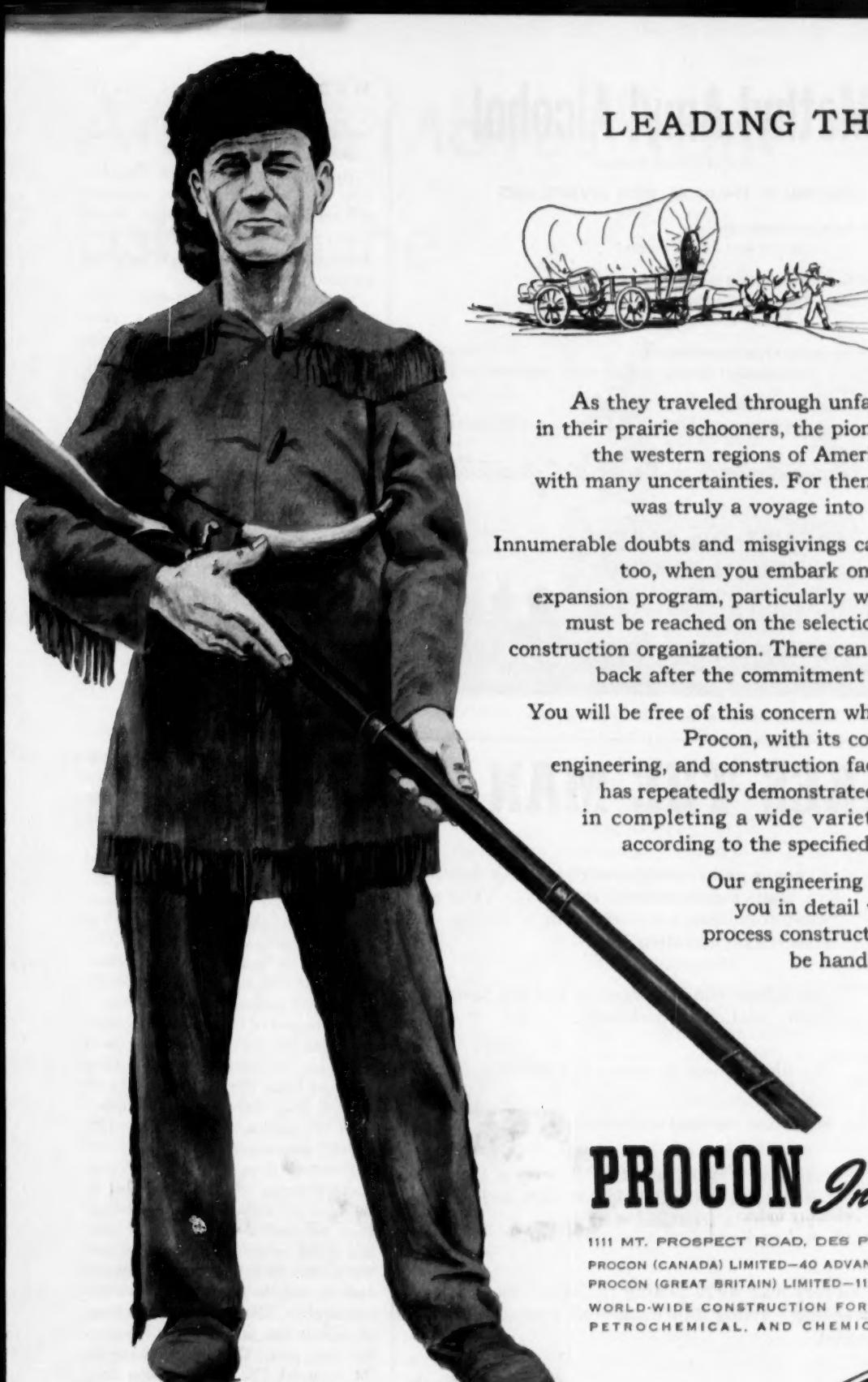
SOME MARKETS for allied chemical products are small, some are large. Occasionally an outlet falls within the realm of the unique—the tires illustrated on this page, for instance.

Conventional in everything but size are the six goliath (4 ft. wide x 10 ft. high) tires on R. G. LeTourneau's (Texas) jungle destroyer (*above*). Paradoxically, the tires can operate on air pressures as low as 5 lbs. This, with the tires' large size, accounts for the machine's small per-sq.-in. weight—about the same as that of a walking man. The 120,000-lb. "Tree Crash'er," well suited for work in swampy and sandy areas, is de-

signed to uproot heavy trees; has a thrust estimated as three times that of an M-24 tank. Order for LeTourneau was filled by Firestone Tire & Rubber.

On the other hand, the first tire made of silicone rubber and glass fibers (*below*), rather than conventional rubber compounds, has just been unveiled by U.S. Rubber and Dow Corning. The raw materials, similar to those used in glassmaking, enable the tire to withstand a temperature range of nearly 600°. The family car isn't likely to be shod soon with the new-type shoe, but the developers have their collective eye on a high-speed supersonic aircraft outlet.





## LEADING THE WAY

As they traveled through unfamiliar regions in their prairie schooners, the pioneer settlers of the western regions of America were faced with many uncertainties. For them, the journey was truly a voyage into the unknown.

Innumerable doubts and misgivings can be present, too, when you embark on an important expansion program, particularly when a decision must be reached on the selection of a process construction organization. There can be no turning back after the commitment becomes final.

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Chemical Week

## MARKETS . . . . .

lates. (Rohm & Haas and Du Pont make methacrylates.)

By anybody's count, the Philadelphia firm is still the larger producer of acrylates, although how much bigger is a debated question. Estimates range from 70% to 90% of total acrylate production.

Carbide's plans, however, may whittle this lead down to a more evenly matched competition. Present plant facilities are currently being doubled as a stop-gap move, with further expansions anticipated, but not yet time-tabled.

Meanwhile, General Aniline has a soon-due acetylene plant in Calvert City, Ky., and acetylene is a raw material for one acrylate process. The implications are not denied.

At this point, the future of acrylics is anybody's guess. But with two heavyweights in the ring, one likely contender on the sidelines, and others reportedly shadow-boxing, the acrylate purse is apt to be split several ways before the fight is over.

## Dyes Down

Production, sales, and dollar values of dyes last year slumped all across the board, according to figures just released by the U.S. Tariff Commission.

Total U.S. output of all dyes dropped 14%—from 166 million lbs. in 1953 to 143 million lbs. last year, an output close to the 145 million lbs. of 1952. The sales volume declined 10%, from 152 million lbs. to 137 million lbs., while dollar values decreased 5% from \$168 million to \$160 million.

The output of Color Index classified dyes was 101 million lbs. in '54, down 14% from 117 million lbs. in '53. Sales declined from 108 million lbs. to 95 million lbs., dollar values dropped from \$90 million to \$84 million—12% and 7% respectively.

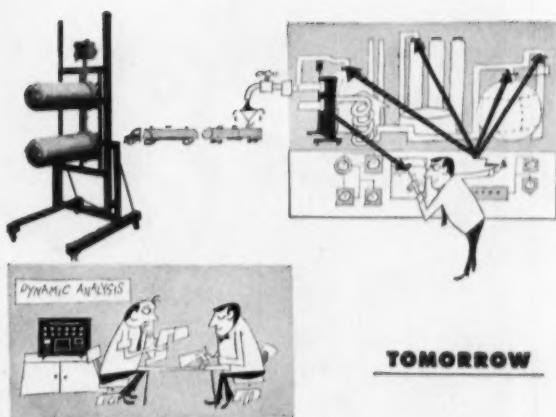
Prototype dyes, despite a 12% production slump to 29 million lbs. in '54 from 33 million lbs. the previous year, retained a *status quo* in sales and dollar values: 30 million lbs. and \$50 million in both years. Ungrouped dyes showed the greatest total production decline. The 19% skid was from 16 million lbs. in 1953 to 13 million lbs. last year. The sales volume in '54 dropped 7% to 13 million lbs., while the dollar value fell off 4% to \$27 million.

# Analysis Moves from Lab to Line

The pride of the automation proponents is the chemical processing plant. Carloads of materials flow through its complex network of pipes into gleaming fractionation columns, purification towers and reactors with a minimum of human attention. Equally large amounts of finished product flow outward without ever having been seen by human eyes.

This complex system functions smoothly thanks to the hundreds of control instruments in any processing plant. They control material flow, they provide the correct temperature and pressure to produce the highest product yield. These plants represent our closest approach to the automatic factory.

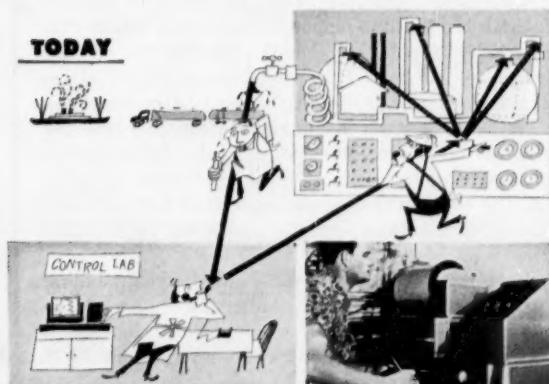
But in this system there are flaws. For even when all dials and gages are functioning correctly, the product yield in terms of quality and quantity may be completely awry. These instruments will not indicate changes in raw material composition, catalyst contamination, or loss of efficiency in a scrubbing tower. Present-day instruments indicate only the process stream environment, not the composition of the process itself. Only the control labora-



product may have moved through the processing units.

An obvious solution is to move the laboratory to the problem, i.e., tie an analytical instrument like the infrared spectrometer directly into the process stream where it can produce continuous and instantaneous data. Instruments capable of providing such "on-stream analytical control" are just beginning to appear. They will not replace existing environmental controllers but they do provide the means for automatically controlling these instruments to meet changing process stream conditions. They close the loop between the product and the process stream environment in which it is produced.

Two such on-stream analyzers are already in production by Perkin-Elmer and are being used in the field. Known as the Bichromator and Tri-Non Analyzers, each has its use depending upon the particular problem to be solved. While the most obvious application for such analyzers is to monitor the finished product, in a complicated chemical process where there are many variables, end point analysis does not provide sufficient control information. Hence, it is found advisable to install instruments at several critical points in the process. Such analyzers will soon make true automation a reality in chemical processing.



tory is able to give us an accurate picture of the product and its composition as it moves through the plant. Subtle deviations in the product can be spotted and analyzed, and from the control laboratory instructions can be forwarded to process areas prescribing changes in control instrument settings. Thus, true control in today's processing begins in the analytical laboratory.

But efficient as they are, control laboratories still represent a bottleneck in the processing chain. It takes time to move a sample to the laboratory, analyze it, and relay findings back to the plant. Meanwhile, vast quantities of

Digest of an article from Control Engineering, Oct., 1954.  
Reprints available from Perkin-Elmer on request.

THE PERKIN-ELMER CORPORATION, NORWALK, CONN.  
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## Refractory to Cast Ti



While a raft of chemists and metallurgists fight with the problems of wresting titanium from its ores (*CW Report*, Feb. 19, p. 34), just as many other crews of researchers seek out best ways to fabricate the highly touted "wonder" metal.

One area of considerable research concerns casting of titanium—nearly every industry has dozens of possible applications for the tough, lightweight castings. So far, though, few industries have had many titanium parts to try.

Casting titanium is a tricky procedure at best, beset by many variables. In recent years, metallurgists have devised several types of satisfactory furnaces and casting procedures.\* A few cast parts weighing up to 110 lbs. (*see cut*) have been made. Still remaining, however, are serious difficulties in manufacturing completely satisfactory molds, and that's where the chemical industry could help.

As J. G. Kura, Battelle Memorial Institute, tells *CW*: "A satisfactory mold material, we believe, is the key to the development of a process of making acceptable titanium castings."

**Three Ideals:** Ideally, say titanium experimenters, a mold should have three basic qualities: it should be cheap (even though potential consumers say they're willing to pay about \$8-20/lb. of weight of castings); it should be easy to form; it should be inert to titanium

\* Because of contamination problems, "skull" furnaces are used to melt titanium. Under vacuum or in an inert atmosphere, the metal is arc-heated in a crucible of titanium. "It's like boiling water on a block of ice," one firm comments.

According to National Research Corp. (Cambridge), casting of titanium is now possible on commercial scale, and it is working with Howard Foundry Co. (Chicago) to produce cast titanium articles.

(even at near 4000 F temperatures at which molten metal hits the form).

So far, all these qualifications haven't been met. Of currently used materials, graphite is favored by many metallurgists. Machined solid graphite has been tried, as well as resin-bonded (phenol formaldehyde) graphite. Other experimental materials include silica (the cheapest), zirconia, alumina, and zirconia.

**Liner Troubles:** Graphite, inert to titanium, has been used to line shell molds, coated on in a slurry or wash. Ammonium and magnesium silicofluoride have also been used to improve the surface of castings, but although they work in thin sections, problems remain: the silicofluorides improve the surface finish, but contamination continues (contamination 0.025-0.035 in. deep can affect bend ductility); neither graphite nor the fluorides can reduce pinholing.

National Research Corp. has done plenty of research in casting titanium, but is reluctant to provide detailed information on its mold materials. The firm believes it has a refractory compound (with colloidal graphite coating) with which it can make reusable molds (these are not termed shell molds) that have low surface contamination, and appear to produce no pinholes. Howard Foundry Co. is currently licensing the process (NRC has applied for patents).

**Throwaway Molds:** Many experimenters believe, however, that the real hope for castings lies with expendable molds—which more or less means shell molds. The size of the chemical market for mold and inhibitor materials is difficult to pinpoint. The aircraft industry has indicated it could likely handle 100-200 lbs. of castings/plane/year, and U.S. production of heavy planes has been well over 10,000 yearly of late. Also, the chemical process industries could employ substantial amounts, as could the shipbuilding industries—for fittings where lightweight, good corrosion-resistance counts. In addition, the U.S. Army ordnance department has numerous classified applications, and has sponsored considerable research projects.

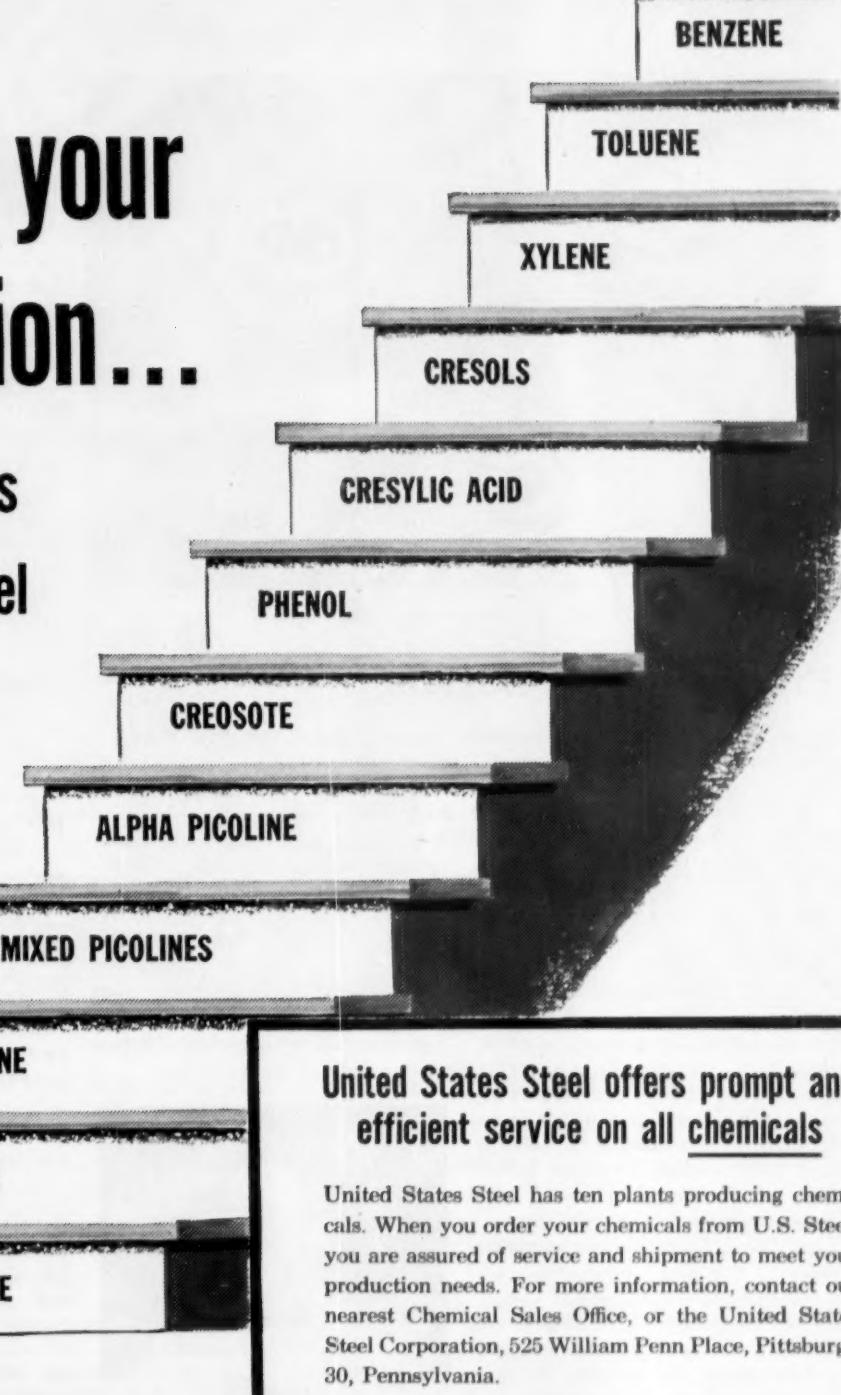
Using some of the presently tried shell molding materials (not machined graphite), the readily visible value of molding materials for plane castings alone could be as high as \$500,000, but foundry owners would like it to be a fraction of that.

The real value of casting materials to the chemical industry is, of course, indirect. It would add an important kick to the utilization of titanium—machining methods now often waste 70% of the raw metal. It would give titanium a chance to prove itself in countless applications, and show it to be as versatile as it has long been extolled to be.

† Battelle describes one mold that provided encouraging results as 97% zircon, 3% phenol formaldehyde binder. A 1% (by weight) wash of ammonium silicofluoride is applied as an inhibitor.

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## USS Chemicals

UNITED STATES STEEL



# SPECIALTIES . . .



WEEKDAYS: Brandt's tumbling compounds bring financial reward . . .

## From Bibles to Barrels

While many are limited to riding one good horse well through life, others, with the zest of a circus acrobat, leap from horse to horse, at times do a Roman stand on two horses at once. Such a man is William E. Brandt, for over 20 years a Lutheran minister, from time to time a research scientist, recently a successful chemical specialty maker, and now all three.

He hasn't been running away from failures; he's done well at all of them. Assigned to an ailing church in Philadelphia, he started with a congregation of 150 in an about-to-be-condemned building, left it with a quarter-million-dollar plant in the suburbs and 600 members reluctant to see him go. Plunging into science and business, he built a \$10,000 investment into a \$314,000/year operation making tumbling compounds for metal finishing—Lord Chemical Corp.\* (York, Pa.)—and a promising home specialty: P.S. plastic laundry starch.

Like many, his interests became divided at college. Arriving from Germany at the age of 19 (in 1924) Brandt started studying for the ministry at the University of Chattanooga (Tenn.). Before he graduated (with both a B.A. and a B.S.) he had become fascinated by science, took every

\* No theological significance; named for former associate, Robert McCurdy Lord, who later sold out his interest.

biology course U. of C. had. But when it came time to make a choice, he took theology, prepared to give up any active science role.

**Summer Lull:** He was content until 1945, when a lull in his church-building, combined with an offer from Sharp & Dohme, Inc., tempted him into science again. At S & D that summer he developed a money-saving way to purify smallpox vaccine (with antibiotics instead of glycerine) and a way of reclaiming some lots of rabies vaccine that had gone bad.



SUNDAYS: His sermons bring spiritual reward.

In spite of the grind (he still conducted services; slept four hours a night), he liked the work so much he decided to switch to full-time research as soon as he fulfilled his obligation to the church.

**Clean Cutter:** A few years after he became a full-time researcher (at Rohm & Haas), he encountered the problem that launched his firm—how to produce a fast-cutting aluminum oxide abrasive for tumbling that wouldn't impregnate metals, turn them black.

A burnishing compound with high soil-suspending qualities was the answer; to make it, Lord Chemical was founded. The firm grew speedily, particularly after it was fed needed capital by Dick Stitely, operator of a metal-tumbling business. Stitely is now president; Brandt, vice-president.

In the basement of the plant a crew is busy turning out one of Brandt's future hopes: P.S., a plastic laundry starch. It's compounded of vinyl acetate emulsion, and is unusual in that it's high in solids content, and is packaged in tubes. Brandt is still building a sales squad for it.

On Sundays he's back in the pulpit, serving temporarily until a permanent pastor can be appointed. He figures the extra job is worthwhile, because the variety of activities keeps him keen on all of them.

How does he like the world of business? Along with the extra money, he likes the work. "I expected ruthlessness . . . I found a world where a thing is either right or wrong; if you can show that what you have is right, you can do business."

## Body Booster

Druggists in half a dozen cities\* last week were selling—8-oz. bottle, \$2.50—a novel specialty food product, Glidden's RG Soya Lecithin. Along with the shipments to dealers, Glidden began a cautious, six-week ad campaign for the granulated lecithin as a "natural dietary food,"—first steps in the firm's program to probe the food sales potentialities of its phosphatide. Although lecithin has been bought as

\* Columbus, O., dealers got their first supplies July 19; Cleveland, Fort Wayne, Ind., Rochester, N. Y., Pittsburgh and Harrisburg, Pa., dealers a week or so later.

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Flexibility after laundering. Both samples formulated to initial equal flexibility.

## Watch out for plasticizers that wash out

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## SPECIALTIES . . .



ENLOE: Correlating \$100,000 worth of research on lecithin.

a food (Glidden says it has made no effort before to "sell" it) for about a decade, it was only six months ago that a trial ad campaign was run in Chicago, Arizona and California. It consisted of a week's newspaper and point-of-sale advertising. That quick push tripled food-lecithin sales. It also opened the eyes of top management to the sales possibilities there.

**Research Risk:** To make the most of lecithin, Glidden officials want more than the Food & Drug Administration's okay that the soya product is a safe food. So, it is planning on spending \$100,000 in an effort to determine exactly what lecithin does in the human body.

The money will go for independent research by five top medical schools throughout the nation; Dr. Cortez Enloe, New York, will correlate this and all other lecithin research for the company.

Some of the lines of research: checking the effectiveness of lecithin in halting diseases of old age (arthritis, and conditions leading to coronary thrombosis). Also, there will be carefully controlled tests of a so-called psychosomatic nature, to see if users taking lecithin actually feel better, or simply believe they do.

There are several purposes of the research. Primarily, Glidden figures it can really go after a big market in ethical foods when it has the clinical data on lecithin's precise role in the body.

Perhaps as important is Glidden's

determination to avoid a patent medicine reputation for its product. Unhappily, Enloe says, some wheatgerm-and-blackstrap-molasses cultists have already landed on it as a "wonder food."

**Talked Up:** During the several years that lecithin has been available in drugstores (via McKesson and Robbins distribution), it has not been advertised. Users simply passed the word to others—and a lot of their talk got back to Glidden. Some of it—letters—was extremely glowing in its praise of lecithin; apparently it helped some people lick everything from hangovers to general debility.

Although it didn't use the letters for sales purposes, the company was stimulated to investigate nutritional values of the compounds. One result was a colorful, 24-page booklet sent to about 180,000 doctors throughout the nation (over 200 medical literature references were cited).

Some of the medical references gave hints as to the possible mechanism of lecithin in body boosting. Certain research indicated that lecithin might be helpful in dispersing accumulations of fatty materials in some of the vital body organs. If so, the chemical wouldn't be performing an unusual role—its biggest commercial use now is as an emulsifier of fats in foodstuffs like candy bars.

**Quiet Claims:** So, until scientists are certain, Glidden is being modest about lecithin. Current ad copy says simply that lecithin is "rich in substances which are important for the proper functions of all living cells in the human body, and therefore, are essential to good health and well-being."

The firm's previous test-campaign mentioned that a tablespoonful of lecithin daily provides 250 mg. of choline, 250 mg. of inositol and 225 mg. of phosphorus—also said that the need for the first two has not yet been established. RG Soya Lecithin isn't suggested as a remedy for any specific ills, either in its newspaper advertising or on the bottle label.

The quiet claims, however, likely don't reflect even a small portion of Glidden's confidence in lecithin. It wouldn't underwrite the research, nor all the newspaper, direct mail, and point-of-sale advertising unless it was pretty sure its soya derivative could live up to its potentials.



CHASE'S SVENDSON: The first 50 million is the hardest.

### Golden Celebration

Chase Products Co. (Maywood, Ill.) loaded its 50 millionth aerosol container last month, signified the occasion by producing a golden container of insecticide. The bugkiller is part of a shipment destined for Argentina, one of the numerous foreign customers of Chase's private-label line.

Claiming to be the largest producer of aerosols in the Middlewest, Chase began packing under pressure in 1947. It was one of the early promoters of low-pressure, beer-can aerosols, which kicked the push-button business into high gear. Executive President Bob Svendson says the firm is now doing business at a \$3-million/year rate, can load 20 million aerosols/year with its present facilities.

### Backed for the Wall

There's a major battle coming up in the endless conflict—between wallpaper makers and paint producers—for the home decorating business. The papermakers, who have been watching sales dwindle in the face of heavy promotion by paintmakers (a campaign abetted by current interior decoration styles that seem to favor paints), have been counterattacking. Their strategy—promotion of plastic-coated paper.

And in step with the papermakers—and sometimes a step ahead—is Resistane Co. (Madiera, O.). Its product, Resistane, is a coating that can be ap-

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## SPECIALTIES . . .

plied either in the home or at its factory—it offers the pluses touted by basic suppliers of plastic-coated wall coverings.

Opening this month in New York is Resistane's second plant, indicative of the success of the versatile coating, which has been nursed along since its introduction in 1948 (although the real heavy selling began only about a year ago). Helping spur sales is recent acceptance by the American Hotel Assn., after testing by York Research Corp.

**Wear Areas:** So far, Resistane has been pushed hardest for application to paper used in kitchens, bathrooms, and along stairways—where soiling is likely to be heaviest. The coating is said to resist water, finger marks, greases of all sorts, inks, polishes, etc. It can be cleaned by simply wiping with soap and water.

Resistane doesn't claim to be the only home-applied wallpaper treatment sold in the U.S. But the company has developed its product with a specific target in mind—the buyer of low-priced papers who wants to match the durability of high-priced, factory-coated wall coverings. Most volume now goes to the do-it-yourselfer, but for \$1.25 per postage-paid roll, the company will machine apply it (a service for householders, dealers and manufacturers). At this price, Resistane can undersell many of the precoated papers.

**Household Bargain:** Home applicators save even more—a gallon of coating, enough for up to 1,200 sq. ft., costs \$10; a quart, \$2.70; a pint, \$1.50. Resistane has developed a special roller for application, although the product can be put on with a folded cloth. The coating, transparent and without noticeably affecting the paper's finish, dries on the wall in about 48 hours. Two coats (the second can go on within 10 minutes of the first) are recommended.

Resistane won't reveal its formulation nor its suppliers, merely describes its product as a "synthetic resin plastic compound." It's a white emulsion, with a pleasant odor. Competitive firms have offered wax, silicone, and other resin coatings, and big chemical suppliers like Interchemical Corp. do a large business in selling stain-resistant materials to wallpaper makers.

Though Resistane says its product can be put on paint, it doesn't sug-

gest it. And the firm is further loyal to papermakers in its instructions to users—it says quite frankly that Resistane can be "steamer removed, papered over, or, heaven forbid, it can be painted over."

**Home for Keeps:** Cook Chemical Co. has purchased its currently occupied facilities of 12,000 sq. ft. in Kansas City, Mo. The 14-year-old firm, producer of insecticides and grain fumigants, paid \$105,000 for its one-story structure.

**Pick-Up:** A new mop and dust-cloth dressing, Dustnox, is said to aid in picking up dust and grit from surfaces without leaving residue. A hydrosol made by U.S. Sanitary Specialties Corp. (Chicago), Dustnox is said to be effective for about a week's normal use.

**Pollution Solution:** The Swiss airline, Swissair, plans to equip all its planes with a new type of air deodorant which it calls P-6. According to Swissair, P-6 is not a cover odor, but instead has the ability to "precipitate" tobacco, cooking, and other odors. P-6, vaguely described as a hydrocarbon chemical, nontoxic and non-irritating to human beings, was developed by Dr. Walt L. Phillips, Phillips Scientific Laboratories, (Newark, N.J.). For plane use the P-6 is impregnated in small glass fiber blocks, which are placed in metal containers distributed throughout the plane's cabin—the glass fiber units are replaced after each flight.

**More Aerosol Area:** Gene Rose, Inc., Chicago, aerosol filler and private-brand developer, is adding 14,000 sq. ft. to its plant.

**For Pesticide Problems:** California Spray-Chemical Corp. now has its bio-screening laboratory operating. Experimental insect and animal colonies will be raised along with a greenhouse of plants to test new Ortho pesticides.

**Small Aerosols:** A 2½-oz. aluminum aerosol can is being made by White Metal Mfg. Co. (Hoboken, N.J.). Designed primarily for the drug and cosmetic industries, Aerotainer, as it is called, is 1½ in. in diameter, 3½ in. high, takes a standard 1-in. mounting

cap. Aerotainer meets all Interstate Commerce Commission regulations, the company says.

**Nay to 'Nay':** Helene Curtis Industries, Inc. (Chicago) introduced a spray deodorant last month and called it "Nay." This month it is introducing it again, calling it "Theme," because the old name hit legal snags.

**No 'Fair Trade' in Carolina:** South Carolina county court judge Legare Bates has ruled the state "fair-trade" act invalid. In a case between Westinghouse Electric Corp. and a local discounter, the judge ruled the act unconstitutional (in conflict with the Sherman Antitrust Act) when enacted, although a later federal law (Miller-Tydings, 1952) allowed such agreements.

The decision is expected to be appealed to the state supreme court.

**Ink Protector:** A new aerosol product—Acrolite Ink-O-Saver—is designed to protect printing ink from oxidation and skinning caused by exposure to air. It is to be sprayed over ink fountains in presses at closing time, over the surface of ink in cans before replacing lids for storage. It's made by Acrolite Products Inc. (West Orange, N.J.), sells for \$3/can.

### Studying the Sprays

New aerosol ideas are anticipated from G. Barr and Co.'s just-opened laboratory expansion in Chicago. The spray-can-filling firm's researchers will concern themselves primarily with new-product development, to speed up the aerosol boom.

Adaptation of existing products to spray packaging will be a large part of the work, but the company also hopes to develop some brand new products. Sticking to straight contract filling, Barr will offer the fruits of its research to customers. Currently, most emphasis is on products in pharmaceutical and toiletry fields.

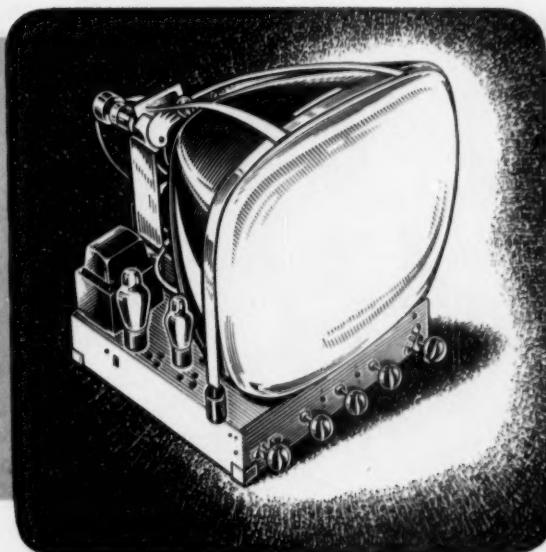
Basic research is also being expanded. The company is seeking information on the corrosion of containers and on resins. In addition to the work of the new laboratory, outside research will also be subsidized (an aerosol research fellowship is sponsored by Barr at Michigan State University).

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# DISTRIBUTION . . .



WATER SHIPMENT: Will its low mineral transport costs help or hinder?

## Mining's Place in the Sun

In just a few months one of the most significant reference publications ever put together by the Bureau of Mines, Dept. of the Interior, will roll off government printing presses. Its title: *Mineral Facts and Problems*. Its aim: to tell what has, is, and will happen in 85 major mineral industries.

Government specialists preparing the big tome figure it will require little revision for five years, offer something of value to many a chemical executive. For the purchasing agent, there are long-term outlooks on supply situations; for market researchers, mountains of trade figures; for commercial developers, technicalities of new markets; for sales managers, a review of distribution problems; and for technical people, data on trends in research and production.

Distribution problems proffer but one illustration. A study points up five general worries that will harass distribution executives in the years to come:

- Development of new uses.
- Reduction of transportation costs.
- Maintenance of adequate economic and technical data.
- Paring unnecessary specifications.
- Foreign competition.

For a more specific glimpse of what the report offers, here's a rundown on the sales climate and distribution problems for several key minerals:

**Asbestos:** Sales generally follow the trends in industrial production and the building industries and the future years bode good for asbestos. Production facilities are ticketed for increases

-mines and mills in Canada, mines in Africa. Sales problems loom, however. Fluid transmissions and molded brake linings are clipping woven friction material sales. Development of new applications for amphibole asbestos (common in the U.S.) is desperately needed to lift current low consumption, and improved statistical data is another basic need.

**Fluorine:** Despite a 110,000 s.t. (19%) drop in fluorspar use last year, fluorine has a good decade ahead. Steel and aluminum demands will boost metallurgical fluorspar use but the biggest growth may well come in fluorine chemicals. Refrigerants, propellants, fluoroplastics, and fluorocarbons may even triple present sales. Nevertheless, domestic fluorspar producers are in trouble—mainly from imports. Since 1952, imports have exceeded domestic production. Now, the U.S. Tariff Commission is studying the problem. Another problem: multiplicity of specifications.

Domestic distribution could be helped considerably, federal experts say, by development of wider use of fluorspar flotation concentrates and artificial pelleting.

**Nitrogen:** Distribution problems comprise the few clouds in an otherwise bright nitrogen sky. Commercial development of high-nitrogen-content fertilizers to drop distribution costs is one must; a pesky seasonal sales pattern (*CW, Sept. 11, '54, p. 82*) is another. And there's quite a headache in picking plant sites convenient to markets, transportation, and raw materials.

**Potash:** Better than 5 million tons of potash is removed annually from U.S. soils. This simple fact, coupled with mounting food needs of a growing population, points to a continued high level of sales for potash producers, (now 2 million s.t./year) but growth will undoubtedly slip. Of the distribution problems facing the industry, European competition may again become important. No tariff on potash fertilizer exists. In 1900, less than 2% of potash consumed was domestic; in 1953, over 90% was home mined. Absence of charter rates for water shipment and the same seasonal distribution pattern as nitrogen are other problems.

**Aluminum and Bauxite:** It's hard to find a pessimist on the future pros-

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## DISTRIBUTION . . .

psects of aluminum sales: in fact, no estimates for 1960 even predict the upswing will flatten out. New products, like siding, wall paneling and special alloys, will spark its use in the building industry. Automobiles, buses, and trucks will take fast-increasing chunks, to say nothing of consumer goods, aircraft, and piping systems. But technical service labs will have to develop improved fabricating and joining techniques. Most serious of current sales problems is maintenance of good economic data.

**Lead:** Once self-sufficient, the U.S. now imports some 35% of its consumption. Exports, which once accounted for 10% of all distribution, are now negligible. Better times lie ahead for lead. Domestic sales should rise from 1.2 million tons this year to 1.45 million by 1975. But in the coming 10 years, only about 300,000 tons/year will be mined here. Pricing to stimulate consumption, new market development, and bettered trade statistics and information rank high among sales problems. Ineffective tariffs are also stirring trouble but Washington seems to lean to stockpiling to pep up prices. Lower transport costs, too, are an important goal.

**Sodium Compounds:** Few distribution problems appear to be the lot of producers of natural sodium carbonate and sodium sulfate. And, say the government authorities, the long-trend sales outlook is mighty good—especially for soda ash. The spark: new wood-pulping plants are using soda ash; synthetic detergents are consuming more phosphates made with soda ash. And, there's the expected general upward swing of industry. Of the existent problems, competition from synthetic material is probably most important. Uncovering new outlets, getting reliable trade data round out the worry list.

**Lime:** Sales in '54: near 7.5 million s.t. "Changing" is the word best describing lime sales in recent decades. Chemical uses, few 25 years ago, now account (combined with other industrial applications including refractories) for more than 70% of all production. Building applications, once high, are now less than 20%. Metallic calcium is slated for rising use—possibly in metallurgical, storage battery, and chemical outlets. Road stabilization and industrial waste treatment are also becoming important distribu-

tion outlets. Helping the long-term favorable outlook: relatively low lime prices caused by elimination of inefficient production. Problemwise, calcium applications must be boosted to bring high-volume, low-price production and there's a definite demand for improved economic data.

**Sulfur:** Saleswise, sulfur should be on the upswing in the years ahead. In 1975, U.S. demand alone should reach 10 million tons. Present sales: about 5 million tons, mostly to sulfuric acid producers.

Future rosy sales hinge, however, on sulfur reserves. Currently, there's a good deal of uncertainty about the adequacy of Frasch-type sulfur both in the U.S. and in Mexico. Thus maintenance of inventories adequate for emergency represents one serious problem. Transportation—freight rates—is another distribution problem. Recently, consumers have been turning to cheaper water shipment of molten sulfur (*CW, July 30, p. 48*). And, improved technical, statistical and market data, as well as more widespread dissemination of data, represents another "must" need.

**Boron:** It's calculated that half of domestic borax production is sold to the glass and ceramic trades. Rising sales in recent years are expected to continue and hopes are high for new sales fields to unfold in organic boron compounds and in hard boron compounds. This means extensive commercial chemical development, as well as promotional activity. Transit costs are a major problem confronting the trade (transcontinental shipment doubles the delivered price of borax) and the usual lack of reliable economic data needs fixing.

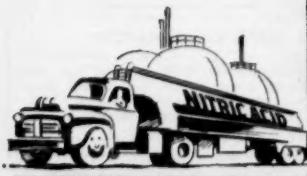
It shouldn't be assumed that sales problems are the only facts gleanable from the book. Quite the contrary is true. In fact, it's possible to get a slant on almost any aspect of mineral activity by analysis of specific parts of the volume-stylized\* presentation. And it's likely that many a mineral information prospector will do just that.

\* The book follows a standardized pattern for reporting each mineral. Following the initial summary, "background" unfolds information on industry size, technology, by-products, substitutes, reserves, uses, statistics, strategic considerations, prices and costs, tariffs, transportation, conservation, research, and other facets. The "outlook" section covers trends, new uses and sources, local and regional developments, and forecasts. A section on "problems" wraps up each chapter. Currently, preprints of some chapters are available.

# NITRIC ACID

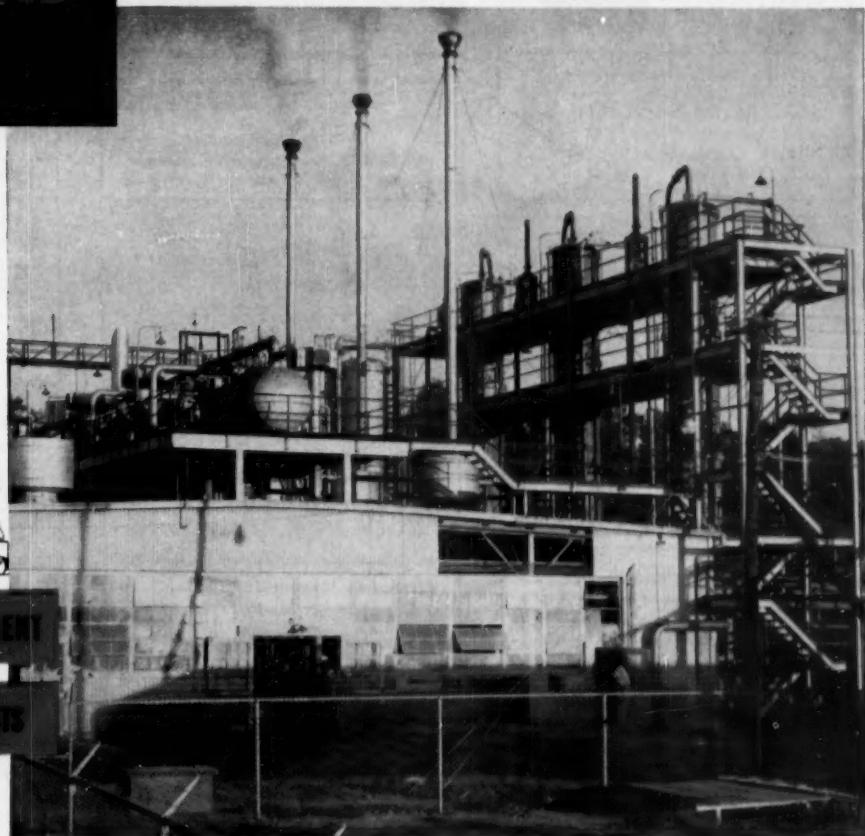
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# process industries

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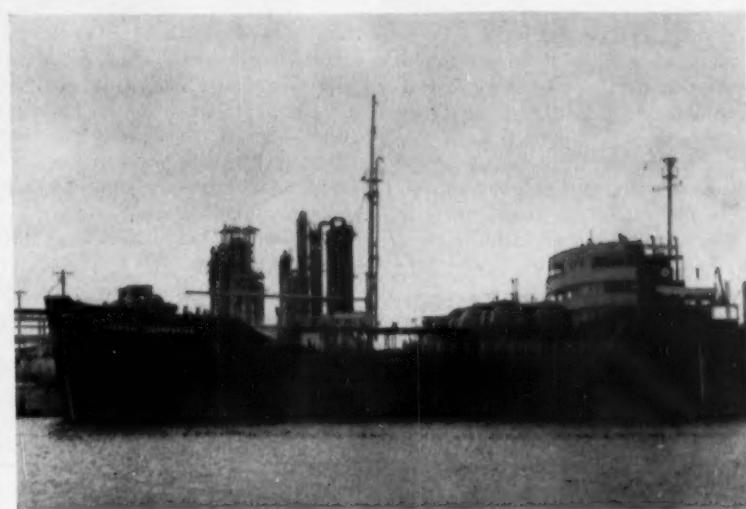
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BO-7243 CHEMICAL WEEK  
330 W. 42 St. New York 36, N. Y.



GALLONS GALORE: Old idea gets new twist as chemical firms start a . . .

## Share-the-Sail Plan

If chemical traffic managers had their way, they'd have a water route to every customer. But problems—such as the necessity for large shipment volume—often block the channels. Relief now, however, appears in sight. Chemical companies—four strong—have leased space on the just specially converted 16,000 ton *Chemical Transporter* to obtain the advantages of low-cost water shipment. Monsanto will ship molten sulfur, transfer to a barge (CW, July 30, p. 48); Commercial Solvents will tote methanol; Celanese will use the tanker for 1 million gal. of solvents, formaldehyde and acetic acid per voyage; and Columbia-Southern will stow caustic soda in the freighter's holds.

The *Chemical Transporter* will sail regularly between Gulf Coast and Northeast ports. Currently, some chemical cargo space is still available.

## Matter of Definition

The chemical industry now has a definition of "liquid chemicals" from the Interstate Commerce Commission. Effective Aug. 1, it draws a line between liquid chemicals, raw materials and finished products, will govern their transportation in bulk form by tank trucks.

ICC gives liquid chemicals this definition: "Liquid chemicals, as used in motor carrier operating authorities, are those substances or materials resulting from a chemical or physical

change induced by the processes employed in the chemical industry, including uniting, mixing, blending, and compounding, except such finished or end products as are intended, at the time of transportation and without further processing, for packaging and sale to the general public."

Decision of whether a product is a liquid chemical by this definition will be made by both the shipper and the carrier. As a rule of thumb, ICC says that a carrier can presume a product to be a chemical if it is carried from a plant that is primarily engaged in manufacturing chemicals to another manufacturing plant. Where a product is taken to another plant only for the purpose of packaging for sale, it is not a chemical, but an end product, and cannot be hauled under the authority for liquid chemicals. Thus, raw latex, and isopropyl alcohol—where they are to be packaged and sold—are not liquid chemicals.

Need for such a definition, says ICC, stems from the present confusion over just what a liquid chemical is. Shippers' and carriers' views vary.

Under the commission's new rule, carriers will not have to file for new authority for each product if they have blanket permission to carry liquid chemicals and the product falls within the new ICC definition. Carriers with authority to carry only specified chemicals must still get permission to haul other products.

The new rule will mean that carriers may have to get new ICC au-

## DISTRIBUTION . . .

thority if they are to continue to carry a product. It is possible that shippers, too, may be left temporarily without trucks to transport their products.

Carriers end up with only one operating right, says the commission, if the new definition causes a duplication of rights already held.

### Label Makes a Reason

What justifies an advertising budget for farm chemicals? One company, Monsanto Chemical, feels that selling your own brand does—even if the main

aim is to help your private-label formulator-customers with promotion. For this reason, and to learn farmers' problems at closer range, Monsanto next year will begin pushing its agricultural chemicals, under its own label, to farmers. Heretofore, the firm sold only to formulators.

To implement its decision, Monsanto so far has:

- Named 18 products for the line ranging from weed-killers to crop desiccants.
- Set up an initial sales region of 15 Midwestern states. District headquarters are in Minneapolis, Des Moines,

Kansas City, and Indianapolis.

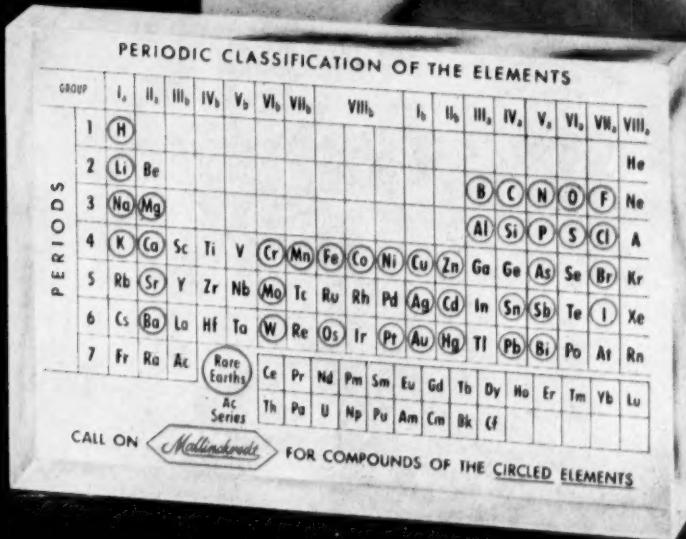
• Announced intentions for "aggressive advertising" and extensive use of educational techniques, particularly "demonstration teams."

Monsanto has no idea of abandoning its formulator market. Formulators will continue to be the concern's major agricultural chemical customer. In fact, the move enables the company to assist its formulators with promotional activity.

Entry by the St. Louis company into direct sales now leaves, it is believed, no major agricultural chemical producer without such sales activity.

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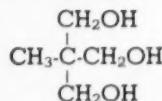
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